

AIRFIX magazine

JUNE 1970

FOR PLASTIC MODELLERS

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MONTHLY



**IN
THIS
ISSUE**

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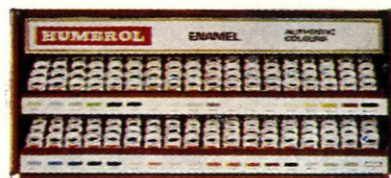


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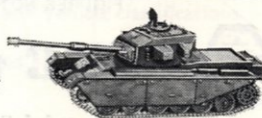
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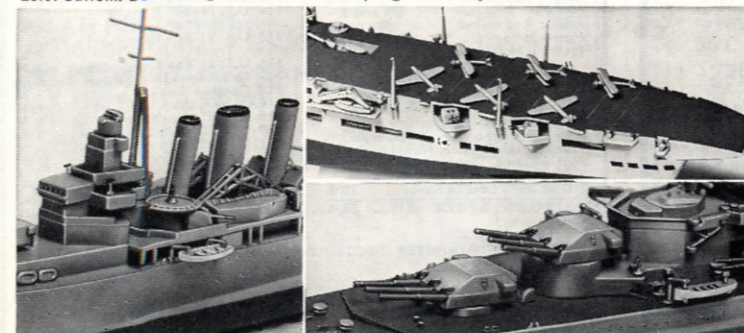
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News, articles, conversions for modelling enthusiasts every month in AIRFIX MAGAZINE. 2/6 from your model shop or newsagent.

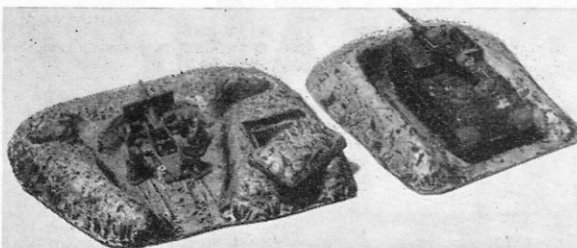
Left: Suffolk. Bottom Right: Scharnhorst. Top Right: Ark Royal.



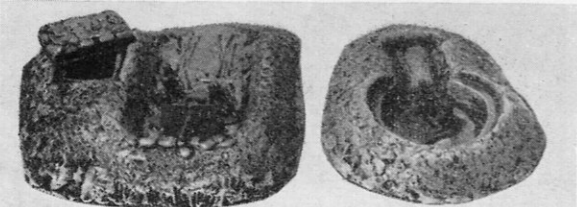
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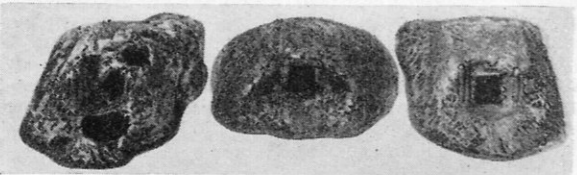
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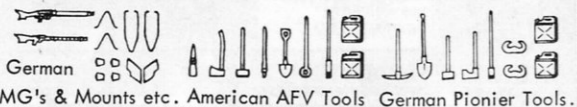


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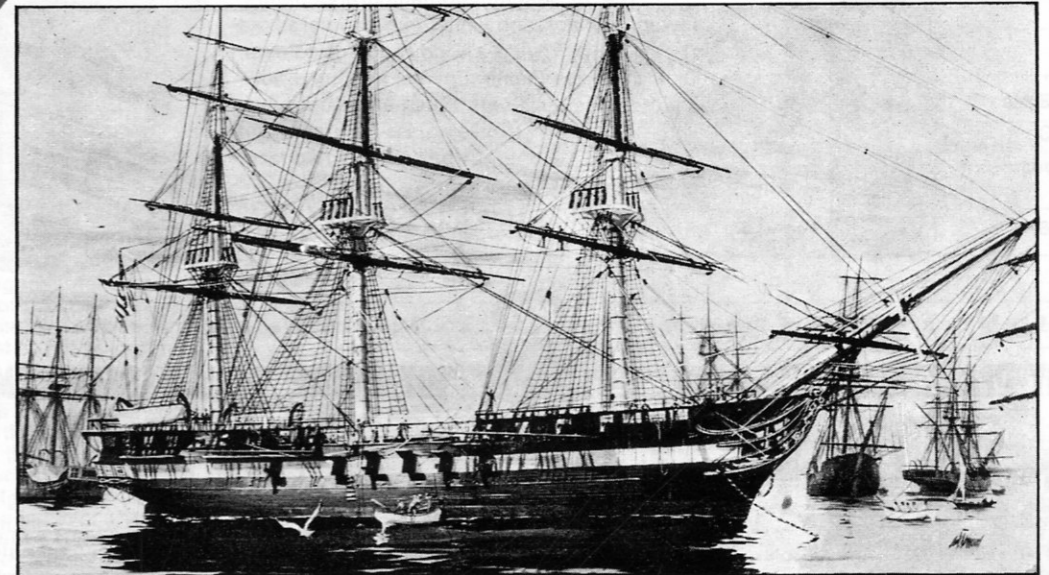
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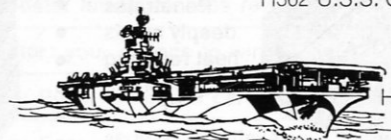
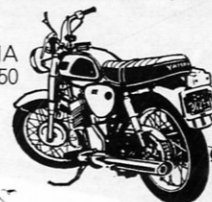
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AIRFIX magazine

AIRFIX magazine FOR PLASTIC MODELLERS

June 1970

Volume 11 No 10

Editor **Chris Ellis**

Cover Picture

An impressive view of the business end of a Federal German Army 90 mm Jagdpanzer, pictured on winter manoeuvres in 1969. The Jagdpanzer is the current standard tank destroyer with the West German armed forces and is equipped with a L/40 90 mm gun which fires standard NATO calibre ammunition. The Jagdpanzer weighs 23 tons, has a 500 hp diesel engine and a speed of about 42 mph. It has a crew of four, and is approximately 26 feet long. The classic 'tank destroyer' shape reflects the traditional German outline adopted for the Jagdpanzer IV and Jagdpanther in World War 2. A model of the Jagdpanzer is included in the Minitanks range. Of interest to modellers in our picture is the typical random application of winter camouflage whitewash over the brown drab basic colour of the vehicle. This partly obscures the yellow bridge classification disc, and the German crosses and call numbers painted on the side of the vehicle. The tactical symbol will be noted, also partly obliterated, and this follows a modified form of the system used by the German Army in the war years and described in our last issue.

(Photo by Hugh Howton)

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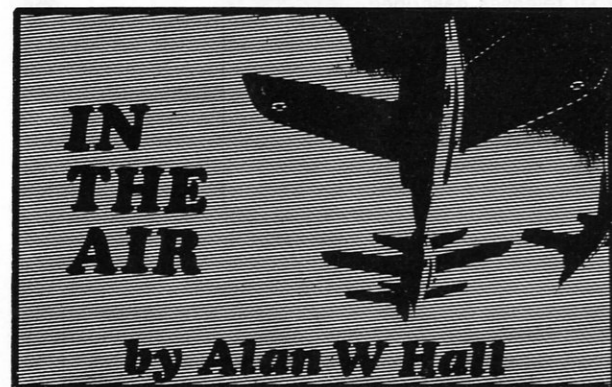
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BUREAU OF CIRCULATIONS

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OUT of the 2,390 Swordfish built, LS326 is undoubtedly the best known of all. The story of its survival over the last 20 years is an incredible one. Few people who have seen this remarkable old aircraft flying can possibly appreciate the luck, attention and, most of all, the dedication which has been needed to keep it airworthy. Although it has never seen operational service nor has any other claim to fame, this sole surviving example of the war-time biplane torpedo bomber has been virtually rebuilt twice since its manufacture by Blackburn Aircraft at Sherburn-in-Elmet in 1943. Recently, after a complete change of engine, LS326 has flown again and will this year be demonstrated at air displays throughout the country.

There is little record of LS326's service during the war except that it was used for training purposes and communications flying, based at the Naval Air Station at Culham, near Oxford, and Worthy Down, near Winchester. There is an indication that in 1944 it could have sustained damage or an engine failure as a replacement Pegasus 30 engine (Serial No 38123/A 411070) was installed by Blackburns at Sherburn-in-Elmet. The airframe hours at this time were listed as only 22.

LS326's only moment of glory came at the end of the war in Europe when it formed part of the large victory display of air-



craft in Hyde Park. The Admiralty soon afterwards put the aircraft up for disposal and it was purchased in the autumn of 1945 by Fairey Aviation together with five other Swordfish which Pest Control Ltd of Cambridge intended to use for crop spraying. The project fell through—five Swordfish were reduced to scrap but LS326 survived and was hangared at Heston airfield.

In October 1947, painted silver with Service roundels and identification marks, it was flown by Peter Twiss the Fairey Chief Test Pilot to Hamble aerodrome where a Check 1 and minor modifications were put in hand. Following various test flights LS326 was declared fully serviceable and it remained at Hamble pending further use. Eventually a year later due to lack of space it was dismantled and transferred by road to White Waltham for storage.

Six years later Sir Richard Fairey, the dynamic founder of



LS326 in typical attitude. A very slow flypast the crowds at an air day with the two crew members standing at the salute.



Pre-war flight deck scene with Swordfish engines running up before take-off, probably aboard HMS Ark Royal.

Fairey Aviation, reputedly saw Swordfish NF389 flying at Gosport and decided that 'We must have ours flying again', and set the wheels in motion. LS326 was therefore transferred by road back to Hamble in September 1954. Those who remembered the splendid condition of the aircraft six years before almost wept; instruments, electrical fittings, compressor, starting magnetos and landing and flying wires were all missing. The aircraft was in a very dilapidated state.

Mr Len Pearce, the manager at Hamble who had been responsible for the production of early versions of the Swordfish, called in Mr Archie Pitt and set him the task of getting LS326 airworthy; 'Keep the cost down', he directed; 'Train some apprentices on it; Sir Richard wants it yesterday so don't make a hospital case out of it'. So started the first major episode in the aircraft's life. Archie Pitt, who is now works manager at British Hovercraft Corporation, was to see the Swordfish through to 1960. Without his perseverance the aircraft would not be flying today. A complete survey was made of the remains. Preliminary investigation disclosed that it was obviously a greater task than first envisaged. Archie Pitt recalls, 'During this period we cleaned and removed all the fittings down to the bare fuselage. Whilst preparing the list of requirements for the rebuild, cleaning of the structure continued, in many cases to the bare metal. As the engine was obviously a key factor we partially dismantled the bottom cylinder assemblies to ascertain the internal condition which in fact was highly satisfactory. At this time the engine had only run a total of 17 hours 30 minutes. In March 1955 we were ready to proceed with the full rebuild having discussed engine problems with the Engine Division of the Bristol Aeroplane Co. Then started a massive search for replacement items. We had decided to modify the aircraft whereby we could delete the 12 volt electrical system and all armaments, and install a 24 volt system with a revised panel layout and instrumentation.

'During the summer months we doubted that we would ever see LS326 airborne again. We scoured junk yards, scrap metal dealers and bona fide aircraft spares dealers. RNAS, Lee-on-Solent, were most helpful. Bearing in mind that they wanted to keep their own Swordfish NF389 airworthy, they allowed us to have any spares we required provided they had at least three of each in stock. We climbed over a pile of wreckage among junk from ATDU and discovered about 20 odd items including four incidence wires and a compressor. All were cleaned, tested and passed serviceable. We also asked the fitters to check around boxes and stores at Hamble where we found odd items. A very essential hand starting magneto was retrieved from a shed where it had been used for gas torch ignition. Additionally, we manufactured odd items in our workshops and bought proprietary items from recognised dealers where possible.'

In September 1955 LS326 began to take shape. In the dope shop Hazel Davies and her team of girls had by then com-

pletely renewed all the fabric coverings and Sir Richard Fairey had given clearance for the aircraft to be finished in Fairey colours of silver wings with Fairey blue fuselage.

During the first week of October 1955 Geoffrey Alington climbed into the pilot's seat and completed a satisfactory test flight, reporting that level speed was 127 knots at an all-up weight of 7,000 lb. On completion of test flying the aircraft was given back to White Waltham aerodrome and joined the 'Fairey Fleet' of civil aircraft. It was used for demonstrations and routine flying with the civil registration G-AJVH.

In March 1959, Fairey Aviation were asked by 20th Century Fox if they could use the Swordfish in the making of the film *Sink the Bismark*. Some of the flying was done on board HMS *Centauro* in the Channel and after the film was over the Swordfish went to RNAS Lossiemouth where it remained until the next Air Day. For the film the Swordfish was painted in camouflage colours with the code letters 5A. These belonged to the leader of the first wave of aircraft attacking the *Bismark* from HMS *Ark Royal*. This colour scheme has been retained to this day.

20th Century Fox completed their requirements at White Waltham with a series of fly pasts for sound recording. This ended LS326's only 'star' role, one in which it earned Fairey Aviation the total sum of £425—a small return for the years of care and work.

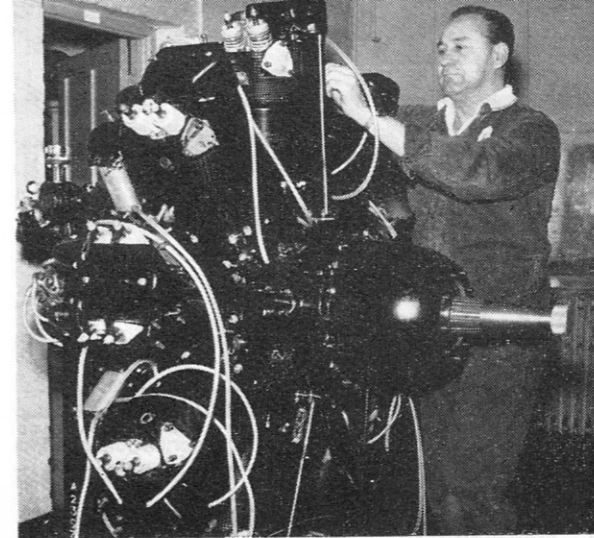
Westland Aircraft took over the aviation interest of Fairey's in 1960 and in September of that year Swordfish LS326 was presented by them to the Royal Naval Air Station, Yeovilton.

So, 15 years after being put up for disposal the aircraft was back with the Fleet Air Arm. Its condition at this time was good and one could expect the engine to run for a further 400 hours. Keeping it flying without a source of spares was another matter. The pattern of LS326's usage was set early on—basically, flying at big air displays throughout the United Kingdom and at Naval Air Days. In 1962 the Board of Admiralty decreed that the Swordfish could be kept as a flying exhibit on specially authorised occasions and for the necessary preliminary practice flights, and was to be relegated to static display only when its serviceability or its appearance rendered it unfit or unsuitable as a flying exhibit. The retention however was not to involve the Navy Estimates in any cost.

In March 1965 the spares situation was getting serious. The officers concerned with the aircraft were searching high and low and the Commanding Officer at Yeovilton wrote to Vice-Admiral Sir Richard Smeeton, then Flag Officer Naval Air Command, listing 12 urgent parts which were needed to achieve the 150 engine hours remaining. Admiral Smeeton in turn wrote to Bristol Siddeley Engines who gave their unstinted co-operation in keeping the Pegasus engine serviceable. Later that year the aircraft was fitted with UHF radio so that it could continue to take part in displays. Slowly the hours began running out on the engine which had been installed in 1944. In 1967 it had run 419 hours, some 81 remaining at the most. At this point Lieutenant Commander Bob Evans joined the Air Station as Maintenance Test Pilot and Air Engineering Officer of Heron Flight, where the Swordfish was kept. Like Archie Pitt before him he became a key figure in LS326's battle for survival.

Everyone knew that the problem was becoming acute, and a scheme was put forward to actually build a spare engine. Bob Evans wrote to all the air publications telling them of the search for a spare engine. 'We got dozens of replies' he said. They

Swordfish NF389 the non-flying aircraft kept by the Royal Navy at Lee-on-Solent. The photograph was taken at last year's Air Day. Note the '5B' code still showing after its application for the film 'Sink the Bismark'.



Chief Petty Officer Christopher Forbes at work on the Pegasus engine rebuilt at RNAS Yeovilton.

were given the names of scrap yards in the Midlands and also heard of a Swordfish which had crashed in the highlands of Scotland. Coverage in the national press brought forth someone who had surveyed some unwanted engines in the Canal Zone. They also heard of some Swordfish flying in Ontario, Canada. Every avenue of research was covered until one of the maintenance ratings on the flight happened to visit the Imperial War Museum, London, and reported on the condition of a Swordfish on exhibition there. The Museum had another spare engine in their store and Bob Evans negotiated to borrow it, remove the bits and started rebuilding the crankcase. By then they also had a set of shafts and rods and two halves of the case and reduction gear.

'We knew that the engine in the Imperial War Museum was in fair condition but the authorities were rather loathe to let us have it,' he said. 'However, eventually we talked them into exchanging their spare for ours, having refurbished it so that the engine looked good externally.' In the summer of 1969 Bob Evans went to the Museum with Chief Petty Officer Christopher Forbes and Leading Air Mechanic Steve Redwin to exchange the engine in the Swordfish. They arrived at the Museum on a very hot day and found that there was no way of lifting the spare engine off the back of their lorry. They eventually decided to use one of the trees in the park nearby and swung the engine on to it and then lowered it down. Getting the engine out of the Swordfish in the Museum was another story. They had to lower the airframe off its stand, roll it forward and let the air out of the tyres so that the airframe was as low as possible before unclipping the engine and putting the jacks in place.

Once back at Yeovilton, the engine was stripped down, and the nine cylinders and pistons, along with the pieces they already had, were put together to start making up a new engine. Outside assistance was given by Rolls-Royce Bristol Engine Division who rebuilt the crankshaft, con-rod assembly and crank case, re-certified the reduction gear supercharger, and gave technical assistance and advice on modifying the sealing of the tappit rollers. New piston rings were also manufactured and in the case of one of the tools required to do the job they had to go back to the original drawings dated 1932 and actually make the item required.

Meanwhile, LS326 had been flying on a limited basis. On July 22, 1969, while being piloted by Captain Paddy McKeown (the Chief Staff Officer to Flag Officer Naval Flying Training), the engine momentarily stalled whilst returning from a display at Booker airfield. Bob Evans and his team checked the fuel system hopefully thinking that the trouble might be a blocked carburettor jet or water in the fuel system. Unfortunately it was not the case, and further inspection was needed. On removing the cylinders the valve seats of Nos 5 and 8 were found to be cracked and the compression rings were also broken. Regret-

Continued on page 466

NEWS FROM AIRFIX

The world's greatest value in construction kits

● Fw 189A-2

● Handley Page Jetstream

● Ford Escort

THE Fw 189 was one of the Luftwaffe's most successful reconnaissance aircraft in World War 2 and was extensively used on the Russian Front. Several versions of the aircraft went into service and when production ceased in 1944 some 800 had been manufactured.

In the 1:72 scale Airfix model the 3½ inch long transparent central nacelle includes three finely-sculptured figures; the pilot, navigator and observer, plus two of the aircraft's four 7.9 mm machine guns to cover against attack from behind or overhead. The 10 inch wing span, slender twin booms and tailplane assembly clearly show the rugged construction of the Fw 189 which enabled the aircraft to withstand substantial ground and aerial punishment and still remain operational. The particular variant modelled by Airfix is the Fw 189A-2.

Moveable parts include the propellers of the two engines, the overhead machine gun and the undercarriage wheels. Other external embellishments in this 67 piece kit are landing light detail, external bomb racks and bombs slung under the wings and a radio antenna. Price is 4s 3d.

JETSTREAM, the Handley Page twin-turbo prop aircraft, was designed primarily for the general aviation market in America. Although production of the aircraft was centred at Radlett in Hertfordshire, the tail unit was built in Canada, the wings in Scotland and the power plants for the civil version were supplied from France, and from the United States for the military type.

The new Airfix kit features the Jetstream 3M which is the military version as originally scheduled for supply to the US Air Force for a variety of training, communications and aero/medical activities. Behind the transparent cockpit canopy are seated the pilot and co-pilot in flying gear and inside the cabin are seats and six stretchers. Window transparencies for the cabin are supplied ready for cementing into position on both sides of the fuselage. The doors of the fuselage can be modelled in the closed or open position, which features aircraft steps, and the undercarriage can be fixed retracted or down.

A full set of the latest US Air Force transfers and painting instructions are contained in the kit, though the recent demise of the Handley Page firm means that the variant modelled by Airfix will not fly in US service. Kit price is 6s.

EIGHT different versions of the Ford Escort car are available, from the saloon to the estate car, and Airfix have chosen to model the former.

Although this 1:32 scale kit is under 7 inches long, Airfix



Above, top to bottom: Fw 189, Ford Escort, and Jetstream 3M are latest Airfix releases.

have incorporated an enormous amount of intricate detail. Remove the bonnet and there is the finely-detailed engine, including the battery and radiator. Inside, a driver is seated behind the steering wheel and authentic dashboard. Panoramic front and rear windows show the detail of the interior which includes gear change, handbrake, air conditioning system and interior furnishings. Price is 4s 3d.

In the Air—continued

fully the Swordfish was grounded and for the first time in many years the public attending Yeovilton's Air Display in September were without the familiar sight of the Swordfish lumbering by.

Throughout the winter, Lieutenant Commander Martin Johnson, who had relieved Bob Evans, Chief Petty Officer Forbes, and Leading Air Mechanic Redwin worked on the engine, finally fitting it into the Swordfish after Christmas. On January 17, 1970, the new engine was test run on the ground in the presence of quite a few spectators. The engine, Serial No P38859, fired on the first crank.

In all, some 550 hours have been spent rebuilding this engine at Yeovilton. Work which has involved many different people all with one aim, simply to keep LS326 flying. Now it is hoped to certify the new engine for a further 500 hour life. With an average use of 50 hours each year the Swordfish has a new lease of life for at least ten further years. The airframe is still comparatively young and excluding mishaps could go on for anything up to 5,000 hours.

Plans are being made to start rebuilding another engine with the Imperial War Museum crank case and the cylinders which have been acquired from various sources around the country.

LS326, the last of the Swordfish, will fly for many years yet, a tribute not only to the courageous Fleet Air Arm fliers of World War 2, but also to their jet age successors who have done so much to keep this historic machine flying.

Note: Information for this article was supplied by Lieut Cmdr H. Lipscomb, RN, Public Relations Officer, RNAS, Yeovilton.

NEW BOOKS REVIEWED FOR MODELLERS

Civil Register

BRITISH CIVIL AIRCRAFT REGISTER, by Gordon Swanborough and John W. R. Taylor. Published by Ian Allan Ltd, Terminal House, Shepperton, Middx. Price 50s.

ALTHOUGH the civil aircraft enthusiast has had, for a number of years, lists of aircraft registrations from the start of civil flying 50 years ago, published by the aviation societies, there has not been a comprehensive book on this subject.

Recognising the need Ian Allan have produced a complete record of all of the 16,000 aircraft that have appeared on the British register since 1919. The book follows the style already laid down by author John W. R. Taylor in his annual civil register books but leaves out much of the detail about previous ownership, constructors numbers and eventual fate of the aircraft. Starting with G-EAAB, a DH6 registered in April 1919 all aircraft, including those not imported to this country, have been shown. The work is current up to Trident 3 G-AWZZ yet to be built for BEA. Notes are included to show such information as first flight dates of prototypes, individual aircraft names in the case of fleets of aircraft and other interesting facts.

In the appendices a section is devoted to reference material on every different type of aircraft on the British civil register giving dimensions, engine details and performance figures. Nearly 150 photographs, some of great rarity, illustrate the text.

Airspeed story

AIRSPEED AIRCRAFT SINCE 1931, by H. A. Taylor. Published by Putnam & Co Ltd, 9 Bow Street, London WC2. Price 50s.

LATEST in the splendid Putnam aeronautical books series, this volume follows the style set by its forerunners, with detailed authoritative text, masses of pictures, many of them rare, and small scale drawings. Airspeed aircraft symbolise typical British aviation products of the 'thirties, with types like the Ferry, Courier, Envoy, and Oxford familiar to all. In fact, the Airspeed company was a product of the 'thirties, its founders being senior staff made redundant by the termination of the R.100 and R.101 airship programme. Among them was Nevil Shute, subsequently more famous as a novelist. This book makes absorbing reading and its well-known author actually worked for the company in the days of its last great project, the Airspeed Ambassador (Elizabethan), surely one of the most graceful and attractive of post-war British aircraft. Included in the definitive coverage are many projects which will be new to most readers and the appendices give individual histories of all the principal Airspeed production types, except for the Horsa glider. Highly commended to aviation enthusiasts and like all books in this series, it is fine value for money.

Under sail

SPRITSAIL BARGES OF THE THAMES AND MEDWAY, by Edgar J. March. Price 84s until July 1, 1970, then 105s.

THE MERCHANT SAILING SHIP, A PHOTOGRAPHIC HISTORY, by Basil Greenhill and Ann Giffard. Price 50s.

Both published by David & Charles Ltd, South Devon House, Newton Abbot, Devon.

TWO splendidly nostalgic books for ship-lovers, the first of these is a reprint of a book published first in 1948, and now revised lightly. Included in the book is a section on modelling some of the beautiful old barges described, complete with a fine selection of scale drawings, and detail drawings of rig and fittings. This publication has long been sought after by ship enthusiasts and its re-appearance is most welcome. The text is highly detailed and covers the historical aspects, the various types of barge, the old barge races, the main barge centres, and aspects of trade and barge operation. In

short an essential reference book on the subject, and very well produced. There is an excellent selection of photographs.

The second book we found even more fascinating, for the authors have literally had the run of the National Maritime Museum archives and have produced some very rare photographic gems indeed, pictures covering the days of sail from 1840 onwards. So there are photographs which many readers would hardly expect to exist, such as Swansea Harbour in the 1840s, and ship repairs in Newcastle in 1845, a really exciting glimpse of the 19th Century which brings the subject more vividly to life than any paintings, drawings, or replicas ever could. This makes a most handy reference book for ship modellers, really capturing the atmosphere of the times—you can almost smell the salt and the tar! Both books would also be worth a glance from railway modellers, for anyone who has tried to reproduce small harbour or dockyard scenes will find many scenic ideas among the wonderful old pictures reproduced.

Land and sea

BRITISH TANKS AND FIGHTING VEHICLES, 1914-45, by B. T. White. Price 42s.

WARSHIPS OF THE BRITISH AND COMMONWEALTH NAVIES, by H. T. Lenton. Price 42s

Both published by Ian Allan Ltd, Terminal House, Shepperton, Middx.

BOTH these volumes are in the usual Ian Allan style, well produced and packed with good reference material. The first book gives a very readable and well-arranged account of British AFVs and their development until 1945. Just over half the book has been published before, however, in separate sections covering tanks and armoured cars respectively. With additional sections covering specialised armour and carriers it makes a very complete and handy volume, highly commended for armour enthusiasts.

The second book is an updated edition of a work first published in 1966. When reviewing the first edition we praised it highly, and in its latest form it is even better, with more pictures and numerous detail diagrams and class tables. All entries are grouped by function rather than by official classification, which is a sensible idea. The only depressing thing about it is seeing how much Britain's naval strength has been whittled away under the short-sighted defence cuts of recent years.

Model aircraft

THE MODEL AIRCRAFT HANDBOOK, by Howard G. McEntee. Published by Robert Hale & Co Ltd, price 35s.

THIS excellent book packs a quart into a pint pot. The author deals with every aspect of the flying aircraft model hobby in concise detail and even finds space for a chapter devoted to the growing field of model rocketry.

Anyone wishing to start building and flying in any branch of the hobby whether it be free flight, control line or indoor flying can learn something from the handbook. Even the most experienced modeller will find something of interest. Each section is amply illustrated by line drawings, well executed, adding much to the explanations given in the text.

Famous fighters

REPUBLIC P-47 THUNDERBOLT described, Part 2, by G. Duval. Published by Kookaburra Technical Publications, Australia, and available in Britain from Motor Books & Accessories, 33 St Martins Court, London WC2. Price 8s 6d, postage extra.

THIS is the continuation of an earlier Kookaburra book which we reviewed in the last issue. Packed with excellent colour art, 1:72 scale drawings, four wartime colour pictures, and plenty of good clear pictures, this is the ideal reference work for anyone detailing or converting Thunderbolt models. More than any previous book we can recall on the P-47, this volume goes into small detail like bomb racks, armaments, and cockpit fittings. The colour art is beautifully reproduced, and it's one of the best Kookaburra books we've seen.

Military enthusiasts might like to know that Motor Books (address above) are now stocking the very useful US Army Engineers' Standard Camouflage Colours—which we reviewed here two months ago. Highly commended, the UK price via Motor Books is 27s 6d, postage extra.

Tank engine conversion

SR 'H' CLASS 0-4-4T

THERE were many more familiar locomotives on the Southern Railway than the former South Eastern Railway 'R1' class 0-6-0 tanks and the choice of this prototype for the Hornby-Dublo 0-6-0T has always been a mystery to me. However, the Hornby-Dublo model, now happily available again from Wrenn, is very useful since the chassis forms the basis of some very fine Wills Finecast and K's Bodyline cast-metal kits. It was after the purchase of one of these kits recently that a Hornby-Dublo R1 tank locomotive body became spare and the idea for this conversion came to mind.

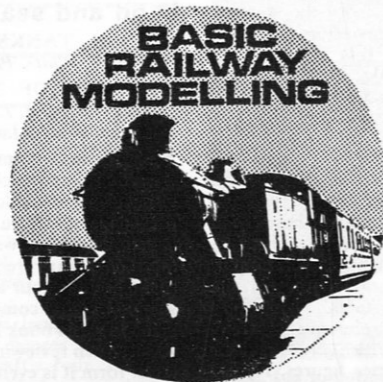
The strong similarity between the 'R1' 0-6-0T and the ex-SE & CR 'H' class was apparent and was confirmed when the body was held over a 4 mm scale drawing. There had to be some differences, of course, and these were mainly the fact that there was no sandbox above the footplate or curved lip along the top edge of the side tanks on the 'H' class and there was a longer coal bunker. These were but minor points and on the credit side there were a great number of points of similarity, mainly the flaired top coal bunker, pagoda roof cab, boiler mountings, smokebox door, basic overall dimensions and the characteristic shape of the locomotive.

The 'H' class was, of course, widely used on the Southern Railway and later the Southern Region of BR. Sixty-six locomotives were built which made them far more numerous than the 'R1' class, and they remained in service until the middle 1960s. They were to be found mainly on the Eastern Section on suburban and branch line passenger trains and from 1949 onwards large numbers of the class were fitted with pull and push apparatus for working auto-trains. Some of my most cherished memories are of seeing them on empty coaching stock workings into and out of Victoria station and on the two-coach articulated set on the Westerham branch. One locomotive, SE & CR No 263, has been preserved.

The choice of motive power for the model was simple since the Triang 'M7' chassis can be made to fit without much difficulty. The main necessity is to replace the coupled wheels. The scale 6 ft coupled wheels of the Triang chassis look just as ridiculous on the 'H' class as they do on the 'M7'. Why proprietary manufacturers have to meddle with prototype dimensions I can never understand. We



The 'H' class tank engines were well-known on the Westerham branch where 31544 was pictured in the winter of 1954-55. This engine is fitted for motor-train working (Norman Simmons).



BY NORMAN SIMMONS

have the absurd situation of the Hornby-Dublo Castle with wheels scale size for a 'Hall' and the Triang 'M7' with wheels big enough for a Southern 'U' or 'U1' mogul. Thankfully it is a relatively easy job to replace the wheels but it is not cheap as Romford driving wheels cost about 9s a pair with axle.

It is best to strip the Triang 'M7' chassis entirely. The method will be obvious to many but it can be rather frightening to a novice who has just spent £2-3 of hard-earned money and is about to pull apart the article he has just purchased. Disconnect the plug-in electrical contacts to the firebox glow fitting. Unclip the firebox glow fitting which is done by squeezing the sides gently with the fingers and at the same time pulling the fitting upwards to clear it from the slots in the frame into which it fits. Take out the brass electrical contacts that are held in with the brushes. Unsolder the brown lead. Unscrew the bottom screw holding the rear bogie pivot and pull the pick-up housing away. Unscrew the rear motor mounting and pull out the motor. Unscrew and remove the rear chassis extension piece, then unscrew the coupling rods.

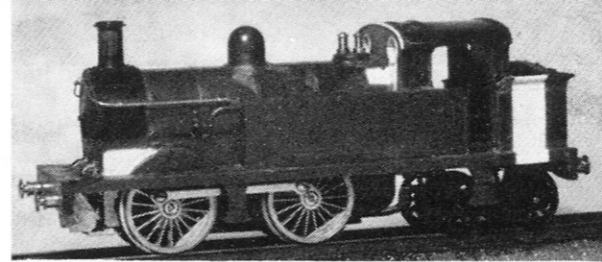
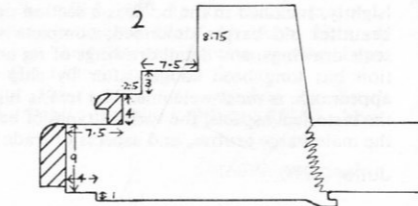
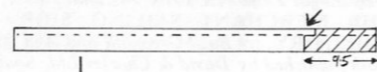
Now you are ready to knock out the axles to remove the wheels. The rear coupled wheel is the easiest since there is no gear wheel and the chassis frame is strong at this point to enable the frame to be suspended whilst the axle is

knocked out. I use a piece of steel rod slightly smaller than the axle, hold it on the axle end and tap it with a hammer. The front axle is a little more difficult as the axle also contains the gear wheel and the chassis is not so strong at this point as two broken halves of a chassis frame in my junk box prove. After stripping the chassis frame down, it is as well to wash it in a detergent solution to remove the oil. All the screws and bits and pieces should be safely stored away and if you have any doubts about re-assembly it is not a bad idea to make a few notes as to which screw goes where.

The front end of the chassis frame should be amended as shown in Fig 2. It is hoped that this will be largely self-explanatory. Very little filing or cutting is required and a Junior Eclipse hacksaw and a small file is all that is required. The method of fixing the body to the chassis I have devised is to slot the rear end of the chassis into the body (more about this later) and to bolt the front end with a bolt running through the footplate forward of the smokebox into a hole in the chassis. Unfortunately no such hole exists on the Triang chassis at this point and one has to be drilled and tapped. A 8 BA hole is probably preferable although I made do with a 10 BA as this was the only tap I had to hand at the time.

I fitted Romford wheels and used their 21 mm coupled wheels which are unfortunately 1 mm undersized, but I con-

Below: Fig 1 shows the channel-shaped rear extension piece for the chassis. Arrowed is the lip left to fit into the slot at the rear of the coal bunker. Fig 2 shows new modified shape for front end of chassis block. Weak point to watch is marked with wavy line. Remove all shaded parts; dimensions given in millimetres. Drawings are full-size for model.



Above, left: The model completed but prior to painting, with plastic card parts in white. Note the scale wheels fitted on the Triang chassis. Above, right: Model after painting in post-war Southern black livery. Couplings and brake pipes are yet to be fitted. Bottom of page: Detail views show all the cab and bunker modifications, and treatment for front end of footplate and splashers.

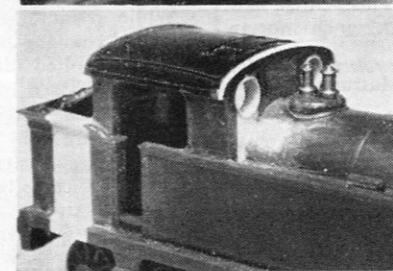
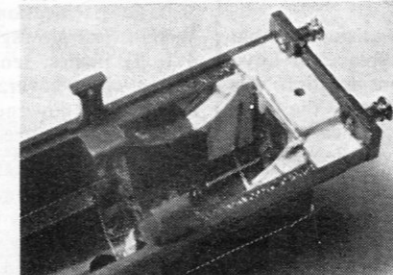
sider this preferable to the 2 mm oversize of the Triang wheels when one considers that the flanges have to be oversize. The Romford wheels have smaller axles than the Triang but special brass bushes are available from most model railway retailers, which overcome this problem. It is possible these might need easing into place either into the chassis holes or over the Romford axles as I have found them to be a tight fit on some occasions, but a few light twists with the tapered handle end of a small file has been enough to cure the problem. Don't forget to buy an extra fifth brass bush with which to re-fit the gear wheel. Romford wheels have no crank pins but I have found it a simple matter to drill and tap the crank pin holes 10 BA and use the Triang crank pin screws.

We will leave the chassis at this stage to turn to the bodywork. Removal of the curved lip to the top of the side tanks was a simple piece of surgery but called for a sharp craft knife blade and file. The Hornby plastic is particularly hard and tough, quite unlike Airfix, but it responds reasonably well and appears to take polystyrene cement and Mek liquid cement. It was decided to fit wire handrails and the plastic ones were removed at this stage. The sandboxes were also found reasonably simple to remove. Now the coal bunker was removed by saw cutting immediately behind the cab. In fact the cab back was used as a guide to the saw when making the first cut. Care was taken to make this cut vertical and to line up the cuts on both sides. The coal bunker was extended with a spacer of 60 thou plastic card, 8.5 mm wide, inserted between the rear section and the cab. An additional piece of 30 thou plastic card, 16.5 mm wide, was cemented behind. The assembly was strengthened by cementing a floor 24 mm wide by 16 mm long at a level immediately above the rear chassis fixing slot in the back of the bunker and further strength was afforded by extending the cab back with a piece of plastic card 24 mm wide down to the floor. Extra pieces of plastic card were used to build up the curved lip top to the bunker and the footplate valances. The whole assembly was given a liberal wash of liquid cement and allowed to dry unhindered. Afterwards it was a pleasure to carefully carve, file and smooth to shape.

The gaps in the forward splashers and smokebox sides were filled in with plastic card. First a strip of 30 thou card 10 mm wide was placed inside along the flat vertical sides of the smokebox, the position of the wheel arch was marked and

cut out and the piece was cemented in place. The top of the footplate and the splashers was then built up with strips of plastic card approximately 3 mm wide. The underside of the footplate forward of the smokebox was built up with plastic card approximately 2 mm thick to bring the body the right height above rail level when fixed to the chassis. The exact height depends upon how much metal has been removed when the chassis modifications were made, but I found one piece of 20 thou plastic card cemented across the full width of the underside of the footplate and another piece of 60 thou plastic card 15 mm x 9 mm cemented centrally did the trick.

It is as well at this stage to consider the chassis mounting screw. I used a countersunk screw but if I was doing the job again I would use a cheese-head screw instead, drilling the hole in the footplate large enough to take the head of the screw, and the hole in the piece of 60 thou plastic card just large enough to take the shank. Unfortunately, I woke up to that idea too late to do anything about it as the pieces were by then all cemented together. A further refinement can be added by closing up the ugly cab front window openings (obviously their distorted oval shape was dictated by moulding techniques) and drilling new circular spectacle plate holes in the correct position 2 mm higher. Finally, a strip of 20 thou card can be cemented round the edge of the roof to give a projection over the front and back of the cab.

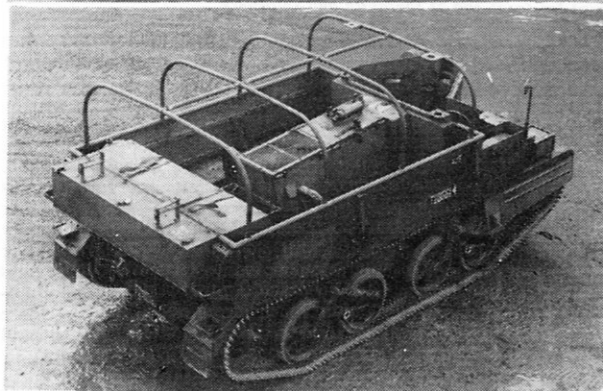
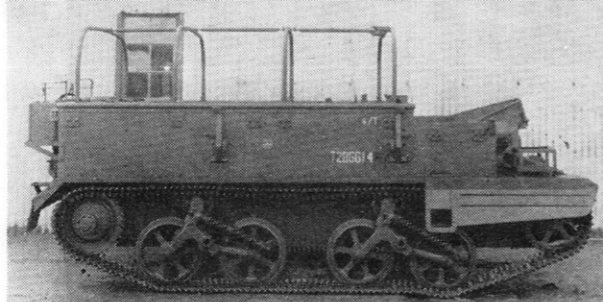


Purists may like to consider further modifications; for instance, the length of the footplate forward of the smokebox should be reduced by 3 mm and the entrance to the cab should be brought forward but not central as shown in the Skinley drawing I have in my possession. I decided not to attempt this as this would involve moving the steps. Another modification is to fit Ramsbottom safety valves and, if you like, tapered shank buffers instead of the short parallel ones on the Hornby-Dublo model. The chimney cap needs to be cemented as there is no longer a body fixing screw to hold it in place as there was with the 'R1'.

To return to the chassis and in particular the rear extension, if the sides of the 'U' shaped extension piece are cut away for the final 9.5 mm it will be found that the extension piece can be made to slot through the slot already provided in the rear panel of the coal bunker. This is a tremendous stroke of good fortune as by chance the slot is the correct height and the resultant fitting of the chassis is simple and robust. After fitting the chassis in place the chassis extension piece which projects through the slot beyond the coal bunker can be marked off and subsequently removed.

The next major change is to the bogie wheelbase which needs to be reduced to a wheelbase of 20 mm. I simply drilled a new axle hole to accommodate the rear axle and cut and filed the bogie to shape, making sure not to open out the box in the top of the bogie frame which accommodates the retaining leaf spring. It was found necessary to file the inside edges of the rear buffer beam to allow the bogie to swing unhindered. Sandboxes under the footplate, both in front and behind the coupled wheels, are prominent features of the class and can be cut from plastic card and cemented to the underside of the body. The only other modification required to the chassis is to reduce the width and length of the firebox glow fitting to fit the reduced cab floor area. The width should be approximately 24 mm and the length 15 mm.

In Southern Railway days the 'H' Class were painted in lined green passenger livery with large numerals on the tank sides. This was obscured by unrelieved black as engines were repainted during the war and the number was transferred from the tank sides to the bunker panels. After nationalisation the class were painted in the standard BR lined black mixed traffic locomotive livery. The smokebox numberplate can be retained or removed depending on the livery you are using.



Above: Two views of the Carrier, Windsor Mk 1, showing tilt supports in place and the interior which, compared to the Universal Carrier, was very roomy (Imperial War Museum).

Part 12: The Windsor and T16 Carriers

TWO further carrier types produced in the war years were of Canadian and American origin respectively, the Windsor and the T16.

Carrier, Windsor Mk I*: Introduced in 1943 (and at first known as the 'Campbell Carrier'), the Windsor was built by the Ford Motor Company of Canada backed by the Canadian Department of Munitions and Supply. This vehicle was designed as a replacement for the Loyd Carrier as a towing vehicle. Incorporating 90 per cent of Loyd components, the design was based on the Universal Carrier but projected as a much larger and more powerful vehicle, the suspension system consisting of four road wheels and two return rollers either side. Armour was riveted bullet-proof steel plate throughout.

User trials of this vehicle proved so very satisfactory that it was proposed as an interim measure to replace all Loyd Carriers with the Windsor and serious consideration was given to develop the Windsor Carrier to undertake the functions of the Universal Carrier. Due to mechanical trouble experienced after production had begun, the vehicle was only in service in small numbers by the end of the war. The Windsor Carrier could be adapted for any of numerous special roles with necessary changes of the stowage arrangement. The different versions are described here.

4.2 inch Mortar Platoon, Mortar Carrier: This vehicle had a crew of five, and carried 22 rounds of 4.2 inch mortar

Below: The Windsor in the 6 pdr A/T Gun Tower role with the 11th Armoured Division, 1945 (Imperial War Museum).



ammunition on the trackguards in the rear compartment. It towed the mortar on a trailer.

4.2 inch Mortar Platoon, Senior Commander's Vehicle: This had a crew of four men and carried 20 rounds of 4.2 inch mortar ammunition. A Sten carbine and three rifles were carried in the rear compartment. A Bren LMG and ammunition was stowed in the front compartment. Provision was made for installation of a No 19 or No 22 W/T set in the right-hand rear compartment. A telephone loudspeaker control unit was stowed in a bin at the rear of the engine enclosure.

4.2 inch Mortar Platoon, Junior Commander's Vehicle: This had a crew of two men and carried 48 rounds of 4.2 inch mortar ammunition in the rear compartment plus a Bren LMG and ammunition in the front compartment.

6 pdr Anti-Tank Gun Towing Carrier: This vehicle was used by some infantry battalions in 21 Army Group 1945, as a towing vehicle for A/T platoons instead of the Universal or Loyd. It had a crew of five men, and carried four boxes of 6 pdr ammunition and detachment stores in the rear compartment.

6 pdr Ammunition Carrier: A 'limber' vehicle for the gun tower, it had a crew of two, carried four boxes of 6 pdr



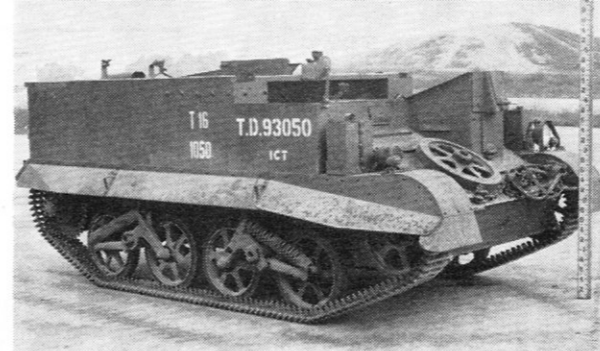
ammunition, plus main and auxiliary gun shields and 6 pdr gun spares and accessories in the rear compartment.

Basic specification for the Windsor Carrier was as follows: Weight (less stowage, crew, fuel): 9,350 lb; height (overall): 4 ft 9 1/4 inches; length (overall) including tow hook: 172 1/2 inches; width (overall): 83 inches; Engine: Ford V-8, 95 hp; max speed (governed): 35 mph; armour: 5-10 mm (front), 7 mm (sides and rear).

Carrier, Universal, T16, Mk I: Designed in 1942, the T16 carrier was manufactured in the United States and was the result of experimental work carried out by the Ford Motor Company of America in an attempt to design a more satisfactory vehicle than the existing Universal and Loyd carriers.

While retaining the basic shape of the Universal, the principal changes in design provided for the use of the hand lever controlled differential steering system (the British Universal Carrier had wheel controlled steering), a Ford V-8 GAU Mercury engine, a re-designed and simplified welded hull structure, and refinement of the track and suspension, which now consisted of four road wheels (in units of two) and two return rollers either side. Three types of road wheel were used; up to the first 1,900 vehicles the spokes of the road wheel were straight, but after this they were curved. Solid disc wheels were also used.

AIRFIX magazine



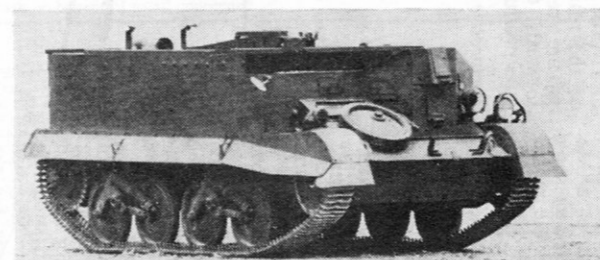
Above: Early production T16 Carrier with straight-spoked wheels (Col R. J. Icks).

Production of 30,000 vehicles for the British was authorised by an agreement between the British Tank Mission to USA and the US Tank Committee, but only a limited number had been built and taken into British service by the end of the war. A few were used operationally by the Australians in the Far East. However, the main use for the T16 came after the war when a number were used by the British for several years. The T16 vehicles were intended to undertake the same roles as performed by the Universal Carrier, the transport of personnel and cargo, as tower for the 6 pdr anti-tank gun, and carrier for the 4.2 inch mortar. When used in this role the base plate was carried on the bow and the barrel on the centre bulkhead.

Stowage arrangement for the British armament consisted of one PIAT, two Bren LMGs, one 2 inch smoke mortar and two .303 inch rifles. Provision for the installation of the British No 19 Wireless Set was also made. Brief details: crew: 4; combat load: 10,500 lb; length: 12 ft 11 1/2 inches; width: 6 ft 11 1/2 inches; height: 5 ft 1 inch; top road speed: 30 mph; armour: hull front (upper)—7/32 inches, front lower—9/32 inches, sides—9/32 inches, and rear—9/32 inches. WD numbers allotted were in the range T.90001-T.117214.

Carrier, Universal, T16E2, Mk II: This model was authorised to replace the T16 in production in 1945, basically similar to the T16, this vehicle was re-worked to improve stability and give better bogie loading. The front road wheel or bogie was moved back 6 inches, the rear bogie was moved back 9 inches and reversed, and the drive axle was moved back 8 inches. This gave a ground contact length of 77 inches as against the 71 inches of the T16.

Below: T16E2 showing solid disc wheels and reversed rear bogie (R. Hunnicutt). Bottom: Late production T16 of Swiss Army, showing tilt erected and curved-spoked wheels (Major J. W. Loop).



It is of interest to note that when the design was first put in hand in USA, left hand drive was contemplated, transposing the arrangement of the front compartment. This was not proceeded with, possibly because US Army interest in the procurement of the T16 petered out at an early stage. An earlier instalment in this series inferred that left hand drive was used—this was not the case, however.

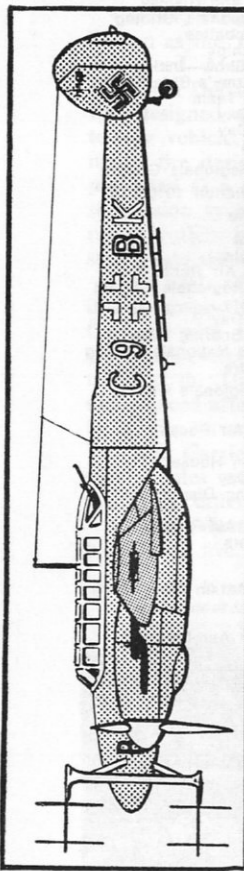
1970 AIR SHOWS

Compiled by Alan W. Hall

Date	Venue	Event
May 9	RAF Odiham	Open Day
10	Merseyside	Battle of the Atlantic
15-16	Goodwood	Formula 1 Air Races
16	RAF Bentwaters	USAF Open House
25	Blackbushe	West London Air Day
	Sleaford	Air Display
	RAF Church Fenton	SSAFA Air Display
	Hucknall	RAFA Air Display
30	RAF Lakenheath	USAF Open House with Mildenhall participation
30-7	Dunstable	Standard Sport Class Gliding Nationals
May 31	Coventry	Air Pageant
	Seething	Waveney Flying Group Rally
	Old Warden	Flying Display
June 6	Denham	Air Pageant
7	Sunderland	Air Day
13	Little Rissington	de Havilland Trophy Aerobatics
	Doncaster	Air Day
13-21	Nympsfield	Western Nationals Gliding
14	Wolverhampton	Flying Display
18-21	Biggin Hill	International Air Fair
26-30	Merseyside	Visit by HMS Ark Royal
27	Woodford	Air Display
	Turnhouse	Scottish Air Rally
27-28	Tollerton	King's Cup Air Races
27-7	Portsmouth	Scottish Regionals Gliding
July 5	Old Warden	Between the Wars Private Flying
June 28	Sywell	Flying for Fun Exhibition and Air Display
July 11-12	Rochester	Air Races and Display
11-19	Compton Abbas	Dorset Regionals Gliding
13-26	RAF Hullavington	World Aerobatics Championships
16-18	Wavertree	Liverpool Show—includes flying by Army's Blue Eagles Helicopter Team
18	RNAS Lossiemouth	Navy Air Day
25	RNAS Lee-on-Solent	Navy Air Day
25-26	Portland	Navy Days
August 2	Sutton Bank	Northern Regionals Gliding
July 26	Old Warden	Military Aviation 1910-1970
31-1	Cranfield	BLAC Clinic
August 1	Panshangar	Air Pageant
2	Old Warden	Small Display
8-9	Redhill	Fly-in and Air Races
8-16	Booker	Wycombe Regionals Gliding
16	Barton	Barnstormers
22	Chivenor	NATO Air Day
22-28	Lasham	Inter-Club Soaring Meet
22-31	Doncaster	Open Class Nationals Gliding
23	Skegness	Barnstormers
29-6	Lasham	Lasham Regionals Gliding
Sept 30	Old Warden	Veterans
August 30-31	Halfpenny Green	Goodyear Air Races
31	Tollerton	Air Day
Sept 5	RAF Alconbury	USAF Open House
	RNAS Yeolton	Navy Air Day
7-13	Farnborough	SBAC Flying Display and Exhibition
12-13	Shobdon	Strongbow Air Races
13	Netherthorpe	Barnstormers
19	RAF Finningley	
	Biggin Hill	
	St Athan	
	St Mawgan	
	Benson	Battle of Britain Open Day
26	Rochester	Esso Tiger Aerobatics
27	Old Warden	Edwardian
	Sibson	Barnstormers
October 7	Sywell	Exhibition of STOL Aircraft
17-18	Teesside	Air Races

OVERSEAS AIR SHOWS

June 20-28	Mandelieu, Cannes	France—General Aviation Show
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LUFTWAFFE MODIFICATIONS

by Timothy Stevens

'Toasting fork' Messerschmitt

Soon after the start of the Allied advance across Europe in 1944, American forces in France came across a crated Me 110 at Corbel-Esonnes railway station. The specific type was a Me 110G-4/R-3, and it was one of the first aircraft carrying the German 'toasting fork' radar aerials to be closely examined by the Allies.

The information which came from the examination provided some valuable technical data for the Americans—but it also provides plenty of detail for the modeller interested in out-of-the-ordinary types of aircraft. The data from the Me 110G-4/R-3, coupled with the fact that in the Airfix range of 1/72nd-scale aircraft is a Me 110D-1, means the chance of an interesting modification. The changing of the model into a Me 110G is a comparatively simple operation.

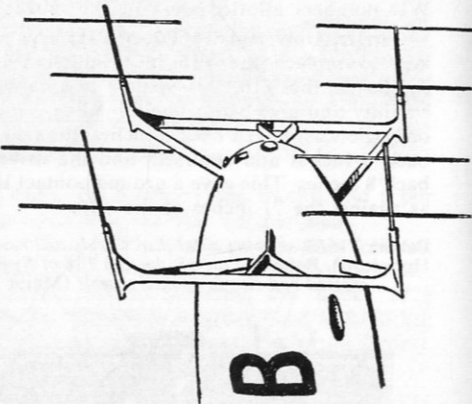
The main external difference between the 'D' and the 'G' was the more powerful DB 605B engines fitted to the later version. These had rather deeper intakes under the engine cowlings and thicker, more simple exhaust pipes. Both these modifications can be made to your kit by mixing a quantity of fine plastic filings with plastic cement. Knead the mixture together into a stodgy mess and leave it until it becomes pliable, but no longer sticky. It can then be shaped like plasticine into roughly the desired shape and left to dry. When it has hardened use a file or fine glasspaper to smooth the part down to the required finish. The completed components can then be stuck on the model in the usual manner.

The FuG 220 aerials on the nose of the Me 110G seem to pose a difficult problem at first, but the parts for these can easily be made by heating and stretching moulding stems in the manner described last month. The main supports for the aerial are flat in section and should be filed

to shape after stretching. Built to 1/72nd-scale, the two upright pylons of the aerial are 7/16-inch long and 3/16-inch apart. The four horizontal prongs are 7/12-inch long. A pair of tweezers and a little patience are helpful in the final assembly of the aerial which is most easily attached to the nose section before this has been added to the fuselage.

The stickler for detail might be interested to know that this aircraft discovered in France carried two MK 108 A/30-mm. guns above the nose, and two MG 151/20-mm. guns under the lower nose. A twin MG 81/7.92-mm. gun was carried in the standard dorsal position and there were also two MGFF/20-mm. cannon fixed to the rear bulkhead of the aft cockpit to fire vertically upwards and slightly forwards. Only about one inch of these guns protruded from the top of the canopy.

Perspective view of FuG 220 aerial for Me 110G-4/R-3



The Me 110G-4/R-3 was finished in an all-over blue with the upper surfaces mottled in grey. The mottling faded out about halfway down the fuselage sides. The Werk number (which corresponds to the British serial number) was painted in small figures in white on the top of the fin. The drawing of the side view of the aircraft shows the operational markings which were painted in dark grey with the letter 'B' outlined in red. This letter was also repeated on the sides of the nose completely in red. The letters 'C 9 B K' were repeated on the undersides of the wings in normal Luftwaffe fashion beginning with the 'C' outboard on the starboard wing and ending with 'K' outboard on port, to read from the rear. The upper wing and fuselage crosses had no black section but the under-wing crosses were normal. No drop tanks or bomb racks were carried.

This is hardly a colourful aircraft, but it is typical of the type of finish used by Germany at that late date in the war. With a well finished FuG 220 aerial, this model can make up into a true collector's item.

Unusual Jet

A variety of unlikely aircraft were roped in by the Germans for use as flying testbeds for jet development and one of these was a Dornier 217E-2, which was fitted with a Saenger ram-jet.

Designed by Dr. Eugen Saenger, this potentially useful engine developed some 20,000 e.h.p. Unfortunately for the Germans no practical application of this engine had been found by the time that hostilities ceased.

The Airfix Do 217E-2 kit provides an opportunity to build the ram-jet version. There are virtually no modifications to be made to the kit itself: the only extra work entailed is the building of the jet engine and its supports.

For once it is simpler to forsake polystyrene when building the engine. You can buy a short length of 3/16-inch dowel rod at most hardware shops for a few pence, and this makes excellent material.

The length of the engine to 1/72-scale is 3.3-inches: the diameter 0.425 inches. The correct diameter and the tapering at front and rear can be obtained by careful



Sketch showing mounting of ram-jet on Do 217E-2

use of glasspaper. It is quicker to use coarse paper at first and finish off with fine. A bottle of sanding sealer can be bought from any model shop and with the help of this you should get a finish on your wood as smooth as that of the plastic.

The supports for the engine can be made from plastic. The perspective sketch shows the arrangement of these. The four slim supports can be made by drawing out moulding stems but it is easier to cut the broad, flat supports from something like the upright part of an old display stand. Make all supports at least 3/16-inch longer than required.

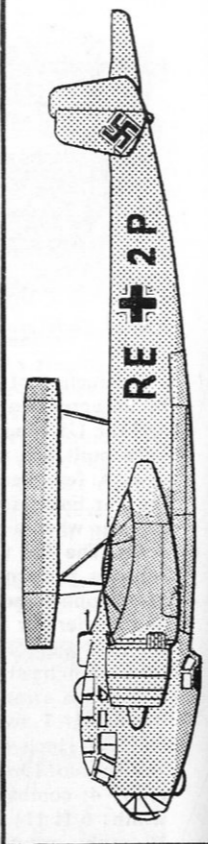
Biggest difficulty in this modification is to join the supports to the engine. Plastic cement will not stick well to wood and the safest way to make a strong joint is to cut small holes in the engine to take the supports and to use some multi-purpose adhesive like Uhu. The lower end of the supports can be joined to the top of the fuselage in the normal manner with cement.

The jet engine will look more realistic if you can make fairly deep holes in the front and rear. The ideal way is to place the engine in a vice and drill out the front intake and rear exhaust holes. If your equipment does not run to this, however, use a hot metal rod and carefully burn out the holes.

The finish of this aircraft was the standard olive green with sky blue undersides. The operational markings are shown in the drawing and were repeated on the undersides of the wings in the normal manner.

Your completed aircraft will be literally unique because there never was more than this one Do 217 fitted with the Saenger jet engine.

Do 217E-2 fitted with Saenger ram-jet



TEN YEARS ON

A retrospective look at our first decade, 1960-1970

TEN years ago this month, *Airfix Magazine* made its first appearance on the modelling scene, so readers may forgive us if we make room in this issue for a page or two to mark the event. From what we hear, a surprisingly high number of readers seem to have all the issues of the magazine so far published, the claim 'I've been a regular reader since issue No 1' being a not infrequent PS on readers' letters. However, some of our present readers were not even born when *Airfix Magazine* first came out, and others have only become regular readers in recent years.

It's fun to look back, however, and discover that we seem to have stuck pretty rigidly to the terms of reference set out by the original publishers in 1960, and reprinted here (below) in the facsimile of the first editorial page. From the list of contents promised, only the stamps, famous men, cartoons, and competi-

OUR POLICY

OF the many trends and happenings of the recently departed "Fifties" perhaps the most important to those whose interests centre on models and layouts was the large scale arrival in Great Britain of plastic construction kits incorporating new-found detail, quality and accuracy.

So enthusiastic has been the acceptance of plastic kits that already there are over 5,000,000 regular modellers in Britain alone.

Airfix has always been in the forefront of plastic kit development and is significantly the largest producer of this type of entertainment in Europe.

And now, to make the enjoyment of all plastic kits, models and layouts, more complete Airfix is introducing the monthly AIRFIX MAGAZINE.

AIRFIX MAGAZINE which will be on sale both in the U.K. and overseas, will contain 52 pages of news, pictures, cartoons, competitions and advertisements appealing to modellers of all ages interested in aircraft, ships, railways, cars, stamps and famous men of speed and adventure.

It will also contain descriptions of the latest kits, models and accessories made by Airfix and all other manufacturers. There will be articles describing in detail particular railway stations, airports and villages on which scenic layouts can be based.

Other features will describe accessible works of reference so that models can be finished more authentically. Outstanding layouts constructed by talented modellers will be discussed and guidance will be given as to how kits can be motorised, canibalised, mechanised and generally adapted to give greater versatility and enjoyment. Another regular feature will give hints on the finer points of advanced plastic kit construction and on finishing techniques. All these articles will be written by experts.

Above all AIRFIX MAGAZINE will pursue a policy of assisting its readers towards a programme of more ambitious and satisfying modelling and to better and up-to-date knowledge of the ships, cars, aeroplanes, trains and other things and people on which models are based.

In pioneering AIRFIX MAGAZINE on behalf of plastic modellers Airfix affirm their intention of supporting, editorially, other manufacturers of allied products in the hope that this will be beneficial to all concerned.

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Cover Photo: A Short Sunderland GR-5 in the colours of Royal Air Force Coastal Command, prepares to alight on peaceful waters.

FOR PLASTIC MODELLERS EVERYWHERE

Left: Vintage conversion—this article actually appeared in issue No 2, July 1960, but it's reproduced here to original size and style, and is still of interest to today's modellers. Our page size increased to its present format from the September 1963 issue. Above: Facsimile of the first editorial page sets out 'our policy', which we still do our best to maintain.

June, 1970



Above: Cover of issue No 1 reproduced about two thirds of its original size. Covers of the early issues were in black and white only. That nice low price would buy you an issue less than a third our present thickness at the present time!

tions seem to have disappeared at a very early stage. Everything else, plus new subjects, remains pretty consistently represented in the contents. The only features which have remained virtually unchanged for the decade have been 'In the Air', 'News from Airfix', 'New Kits and Models', 'Book Reviews' and 'Letters to the Editor', the regular departments in fact. All else has been modified over the years, mainly in a swing from articles which gave generalised 'chatty' coverage of their subjects to the more ruthlessly practical or 'reference book' approach of recent years, which reflects the ever-increasing demand for background information and modelling ideas sought by the current generation of modellers.

This is not unique to *Airfix Magazine*, of course, for over the same period the standard of modelling, and the standard of plastic kits (and their range) has increased considerably. So today there are paints, transfers, kits, reference books, and facilities available which the innocent purchaser of *Airfix Magazine* for June 1960 (myself included) could never have foreseen in his wildest dreams. Similarly, from being regarded as little more than overgrown kid's stuff in 1960, the plastic kit hobby seems, by 1970, to have reached a pinnacle of acceptance so much so that manufacturers' export figures get quoted in the city columns, plastic kits even figure occasionally in the trendy colour supplements, and some of the more exotic Japanese-made kits are so

Continued on next page

Ten years on—continued

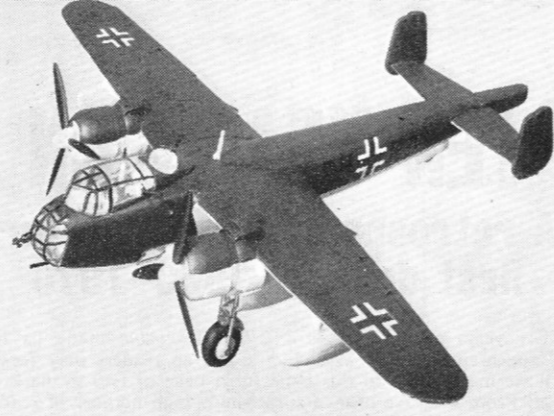
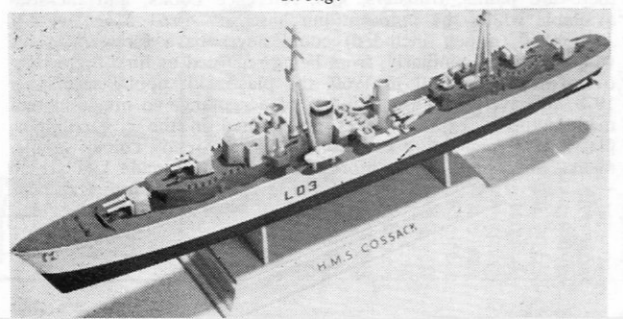
complicated and so expensive that they are usually well beyond the financial reach of the youngsters at whom plastic kits were largely aimed in 1960.

Fortunately, however, if the plastic kit hobby and the industry which supports it has expanded well up the price range, the exotic kits are still completely outnumbered by the inexpensive kits which form the 'bread and butter' lines of the main manufacturers'. Almost everything in the Airfix range of 1960, for instance, can still be had today and even though the galloping inflation of recent years has seen kit prices increase by something like 30 per cent (or more), it is still possible to build up a reasonably imposing collection of models without spending much more than 3s per model, which is still inexpensive by comparison with many other hobbies.

Taking a look back at our first issue, 'News from Airfix' announced the Dornier 217E-2, the Me 262, HMS *Victorious*, and the Bristol Bloodhound missile set, all going strong today. The only plastic kits in the 'New Kits and Models' section were some Aurora offerings, everything else being car models, tools, Jetex flying models, and Superquick railway buildings. Plastic kits figured more largely in later issues, however, and among the new releases you could have bought in the Summer of 1960 were the Monogram Grumman *Gulft Hawk*, a Neptune from Revell, the USS *Forest Sherman* from the same firm, and a Supermarine Swift, no less, in 1:72 scale from Hawk. Military kits were very few and far between in 1960, however, with the Airfix range still to come. The earliest military review appeared in the September 1960 issue when Aurora released their 1:48 scale Centurion Mk III. It was not until 1963 that the first regular military modelling articles appeared and only in late 1966 that added pages allowed us to start expanding our military coverage in response to popular demand. Similarly, in 1960 when the magazine first appeared, the OO/HO size model soldiers were still a range of the future as were ship kits in any numbers. Soldiers in 54 mm scale in those days were still largely lead.

So, in 1970, if the policy hasn't changed editorially in *Airfix Magazine*, the contents certainly have, and squeezing all our usual subjects into the average issue of today has become a major monthly exercise in compression, a sort of editorial equivalent of forcing seven people into a BMC Mini. Sometimes something gets unavoidably left out (which leads to complaints from that section of our readership concerned) but fortunately we are lucky enough to have the most enthusiastic and loyal readers I have ever encountered in my experience of publishing. This reflects in the postbag, which is so vast that I live almost permanently behind a mountain of letters, many of which will never get answered because there are not enough hours in the day. The letters which get published monthly represent under half of the total number of letters received on a very quiet day, and if we published all the letters we received, the entire magazine would consist of nothing but 'Letters to the Editor'. At one time, when *Airfix Magazine* was one of a group of half a dozen or so publications, the letters received in one day usually totalled more than all the other magazines of the group received together in one week! There is always a pile of letters about 18 inches deep on file and worthy (in my view) of publication, but only a very small proportion of these eventually get published. So this may explain things to readers who say they've written six times and never had anything published!

Similarly, not a week goes by without someone asking for a job on the staff, and one keen French reader even offered to **Below:** Not in the first issue, but released soon after was the first Airfix 1:600 scale ship kit, HMS *Cossack*, which is also still going strong.



Above: Old-timer still much in evidence is the Airfix Dornier Do 217E-2 which made its appearance the same month as Airfix Magazine and was the very first kit described in 'News from Airfix'. This is the same picture as appeared in our first issue. Released at the same time was the Me 262 and the Bloodhound which was recently 're-released' in the Hercules kit.

come to England and do an English course at his own expense in return for a post as a draughtsman. Regrettably I always have to dispel these applicants' fond illusions that there actually is a staff for, contrary to some impressions, Michael Bowyer doesn't just spend his time visiting airfields and writing about aircraft, and Alan Hall doesn't spend all his time just making models. In fact, all our regular contributors started off as readers and only became contributors by the simple process of writing a 'Letter to the Editor' in the first place. Only our stalwart and hard-working contributors, Messrs Bowyer and Hall were founder-contributors in 1960, and Alan Hall was actually the first Editor, in fact if not in title. Thus *Airfix Magazine* is very much the work of its readers—drawings, pictures, articles, the lot, with contributors' ages ranging from 16 and upwards and occupations varying from schoolboys, schoolmasters and civil servants, to serving members of the armed forces. *Airfix Magazine* is also pretty mobile—wherever the Editor happens to be, in fact. Three issues were virtually put together in hospital, for instance, with no visible effect on the magazine but considerable upheaval at the hospital concerned—on this occasion an innocent contributor who took a holiday in London specifically to meet the Editor, found himself shuttling page proofs and articles between office, hospital, and printer, and living in the Editor's flat for the duration of his stay!

One part of the editorial policy announced in *Airfix Magazine's* first issue which has stayed unchanged is the last paragraph. We are able to be pretty unbiased, even though the magazine is actually owned by Airfix Products Ltd, and neither the Editor nor any of the contributors have any connection with Airfix other than as customers for their kits. Thus we have always reviewed other manufacturers' products (when submitted for review) and hope that this remains 'beneficial to all concerned' as the first editorial put it. Airfix kits do, of course, predominate in our practical conversion articles because that, in the first instance, was the idea of the magazine. I once worked out conversion possibilities from the Airfix catalogue and so extensive is the range that I reckon we could go on providing conversion ideas for another six to eight years at the present rate of publishing, even if Airfix stopped releasing new kits!

Even though nobody connected with the magazine has any direct link with Airfix, it is nonetheless amusing to find that a lot of readers think that *Airfix Magazine* contributors actually design the kits; they don't, but we pass on compliments (or brickbats) in the right direction. On a couple of occasions recently we've even been offered new factories by estate agents who thought we were Airfix!

Enough of this digression, however, for it takes up space better devoted to conversion articles. It only remains to thank our ever-growing band of readers who have followed our efforts over the past ten years and those who have become contributors over that period. Now, just to round off our decade of publishing, our veteran contributor Michael Bowyer looks back at 1960 in an article which didn't appear in the first issue.

Chris Ellis
AIRFIX magazine

Colours 1960

MICHAEL J. F. BOWYER
LOOKS BACK TO THE AVIATION
SCENE OF A DECADE AGO



IT is surprising how many types of aircraft flying in 1960 are now but a memory. Lincolns, Mosquito 3s, Ansons by the score, Valettas, Javelins, Valiants, Canberras of many types, Yorks, Hastings, Beverleys, Vampire IIs and many more were to be seen, some of these types forming the backbone of the RAF at home and overseas when *Airfix Magazine* was born. It is surprising, too, how few of these types are featured by the model manufacturers in their kit ranges.

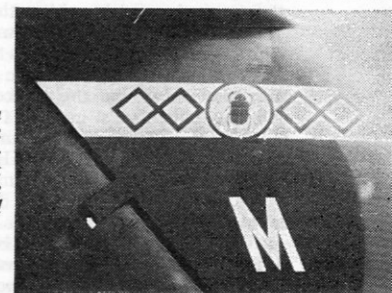
By 1960, the Canberra was in very widespread service with the RAF. Bomber Command's machines were generally 'silver' with squadron crests on their fins. In Germany a dark sea grey/dark green/dark 'silver' finish was usual on the PR aircraft, whereas in Cyprus and Malta, as in the Far East, the usual colour was 'silver'. But these are generalisations and in detail the machines often within the same squadron differed. No 45 Squadron's aircraft were no exception. WJ570 a B, Mk 2 in silver had a black port wing tip and carried a red winged camel on the fin. WJ632 had 2 ft fuselage serials and on its fin there was a black camel with red wings, all painted on a white disc. WH874 had a similar fin disc with a black 'E' on the tip tanks and a red fin leading edge.

WT520, a PR7 of 80 Sqn seen on April 22, 1960, wore standard green/grey/silver finish. It had a white 8 inch fuselage serial and '20' in white on either side of the nose. On the port side of the fin appeared a blue diamond upon which was the yellow bell insignia of 80 Sqn. Like some Canberras of that vintage, this one had a buff coloured di-electric panel forming much of the fin area. WJ988, in grey/green/silver, belonged to 75 Sqn, RNZAF, when I saw it in April 1960. It had a red kiwi motif outlined in white and superimposed on a blue map of New Zealand, also outlined white. Its camouflage extended about six inches on to the under surfaces of the wings and tailplane. WJ605 of the same squadron had 2 ft white fuselage serials, with

Below: A Javelin FAW9 of 64 Sqn XH764:B, with fawn radome and 64's fin stripe. **Bottom:** Javelin FAW9 XH881 of 25 Sqn with nose and fin letter, 25's fin stripe flanking its squadron badge, black intake rim and fawn radome.



Right: Close up of 64 Squadron's fin marking. 'M' was XH872. **Above:** Lincoln B2 RF389, based at Lindholme in 1960. Glossy grey/black finish with the large serials of the time as also applied to Canberras and other bombers.



605 in black on the nosewheel doors and the Kiwi-map insignia.

There were still T4s in silver finish with yellow 'T' bands, like WT486, and some grey and blue PR3s such as WE136 of 231 OCU, but there were yet more exotic specimens to view. One such was WD953, an all white B2 from A & AEE with wing tip cameras and a large black panel beneath each wing on which WD953 was painted in the usual 4 ft size in white. Another oddity was Mk 6 XH567, in silver with black under surfaces painted as on the B2s of the mid-1950s. Another white B2 was WJ725 used for ejector seat trials. She had red panels on her fin and a red tailplane. The tail and wing leading edges featured a black stripe.

Bomber Command had squadrons of Mk 6s of which No 9 Sqn was one. WH977 of this squadron, typically silver, wore 2 ft fuselage serials and had a light blue fin disc upon which was painted a bat in grey-green with IX above it in red. The fin panel was light grey, the port nosewheel door bore the aircraft's serial and the nose had a black anti-dazzle panel. A Canberra 8 seen in August was WT366, painted glossy dark green/dark grey/black, which had a red hollow triangle on the fin filled white and bearing a black exclamation mark. This motif was an adaptation of a continental road sign by 59 Sqn. WT368, another B8 seen in September and of 88 Sqn, had a yellow and black curling snake on its tail. A wide fawn band crossed the top of the fuselage from roundel to roundel.

Bombers of the V-force were all white and most common was the Valiant. Typical examples were XD867 with 90 Squadron's green fin pennant bearing XC in yellow, and XD875 of 207 Sqn, on whose fin the red emblem looked forward on both sides. Black radomes were usual on the Valiants but an exception was XD818 which had a white one. Two other oddities of 1960 vintage were WP199 and WZ375, both in dull aluminium finish and used for experimental work, the latter as a Blue Steel trials aircraft. For the purpose it had a much modified bomb bay. Another odd shape was the white Victor XA930 which had the external wing 'tanks' which were to be a feature of the Mk 2.

One of the Victor squadrons was No XV which demonstrated a quick reaction take-off at the 1960 SBAC Show. Among its

Continued on next page

Colours 1960—continued

machines was XH588 which was all white with black serials on the nosewheel doors, on the rear fuselage, and beneath the wings. Its squadron motif was painted above the fin flash. Roundels were still in the standard shades. Vulcan 1s were also in use, such as XH497 of 617 Sqn, whose crest appeared on the nose, and whose black serials were on the fin and beneath the wings.

There were veteran Lincolns still flying, such as RF570 which had dark grey/black finish and large white fuselage serials. She was based at Lindholme. Another in excellent condition was RF389 which also had large fuselage serials and blue spinners. It looked curious with a black anti-dazzle panel which Lincolns rarely wore in their heyday.

The Javelin was at the height of its service career in 1960 with six different marks equipping the squadrons. Latest addition was the Mk 9 which had just entered service. XH883:H of 25 Sqn was the first one I had a look at, in April 1960. It wore the usual dark sea grey/dark green/silver finish and had 25 Squadron's silvery white fin band flanked by black lines. 'H' appeared on the fin and nose in white, the fuselage serials being the same colour. With this machine were Mk 7s of 23 Squadron with white nose letters, red falcons on white fin discs (the birds facing forward on both sides of the fin), white intake serials, and red and blue checks on the intakes outlined with a thin white line. All the squadron's machines had black rims to the intakes. XH960:N was a typical example. A Mk 7 of 25 Squadron in use at the same time was XH959:Q with tail and nose letters, white serials, black intake rims and a black radome.

XA780:C of 46 Sqn was a Mk 2 with the red and white three-arrow motif of the squadron on its fin, and a yellow 'C' close by. The nose radome was black—it varied in colour on the Javelins from fawn through various shades of brown to black—and the serials were black too, but the intake rims were silver.

By August 1960, 64 Squadron was also flying some Mk 9s such as XH872:M wearing usual camouflage. A white stripe was painted across the tail wearing red and blue zig-zags with a blue scarab centrally placed. 'M' appeared on the fin in white and the intake rims were black. A Mk 7 still with 64 was XH788:D. Javelins had yet to acquire in-flight refuelling probes.

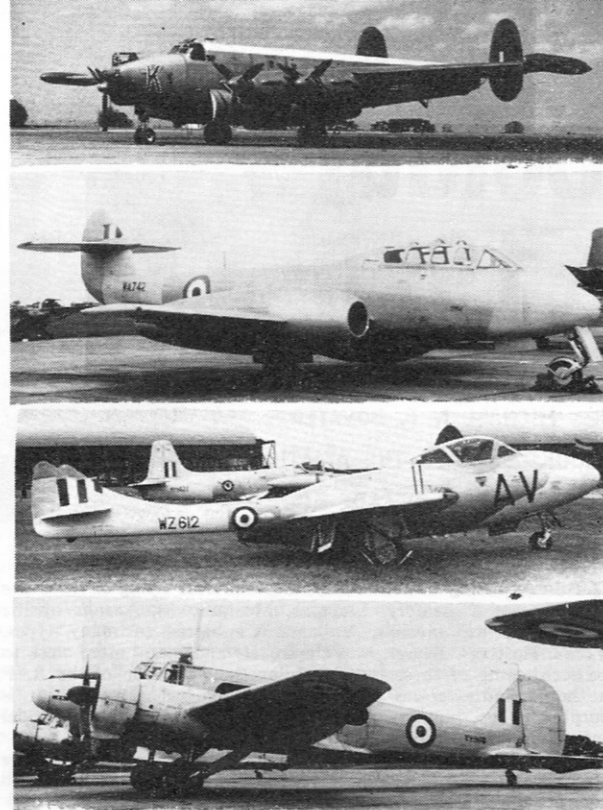
There were Hunters galore in the squadrons and 65 Squadron's machines were typically finished. XF383:V in standard green/grey/silver had a yellow fin letter, and white wing tips introduced to aid cine assessment. 65's red chevrons flanked the unit crest on the nose on a white stripe. On the nosewheel door the individual letter appeared yellow outlined white. Various marking differences were apparent amongst the squadrons, of course; No 74, for instance, having black nosewheel door letters as on XE591:G.

Usually the squadrons each had a silver T Mk 7 in the finish specified for fighter trainers. XL600 was 65's machine and it wore customary yellow 'T' bands but had no individual letter, although full squadron markings were applied.

There were Hunter 9s about, mostly Interim FGA9s like XE552:M of 54 Squadron. They were identifiable by the braking-parachute housing over the end of the tail pipe. XE552 had 'M' at its fin tip in yellow, and 54's usual blue and yellow checks on the nose interrupted by the squadron emblem.

The best known Hunters were without doubt those of 'Treble One' Squadron, 'The Black Arrows', with their glossy black finish and minute red serials and fin letters. For the SBAC Show their strength was inflated by the addition of XE561:Z of 19 Squadron, XE627:T of 65 and XG229:M of 56. 'Z' of 19 was unusual with its checks on the rear fuselage and white Z on the fin. XG229 had a white fuselage serial, and 'M' in white on the fin fillet outlined red.

Coastal Command was, of course, flying Shackletons as it has been now for nearly twenty years. Mk 2s and 3s were in use in extra dark sea grey glossy overall finish. Serials on the fuselage were red, and in red outlined white beneath the wings. Squadron numbers and letters were also red outlined white as on XF709:201-N and WR986:203-K. The latter had red tip tanks, white fuselage roof and a red tailplane. The only exception to these coastal colours was on the search and rescue Whirlwinds



Top to bottom: Shackleton MR3 'K' of 203 Sqn in 1960. Glossy grey with white top and red tip tanks makes up the colour scheme. Meteor T7 of Waterbeach Station Flight. It is silver with orange dayglo nose and tail. Wing tips of WA742 were also dayglo. Vampire T11 of 5 FTS Oakington wears orange dayglo slightly differing in pattern to that applied at the factory. Rudders remain silver. AV in black on both sides of nose. A typical 1960 Anson of a period when the dayglo patterning on these aircraft was highly individualistic. Silver with white roof and dayglo orange cowlings, etc. Aircraft is a Mk21, VV968.

which were all yellow with black letters and numbers. A new feature of these was the carrying of their squadron crest as on XD183 which wore 228's badge on a black rectangle on the starboard fuselage side. The Whirlwinds were now carrying the legend ROYAL AIR FORCE COASTAL COMMAND.

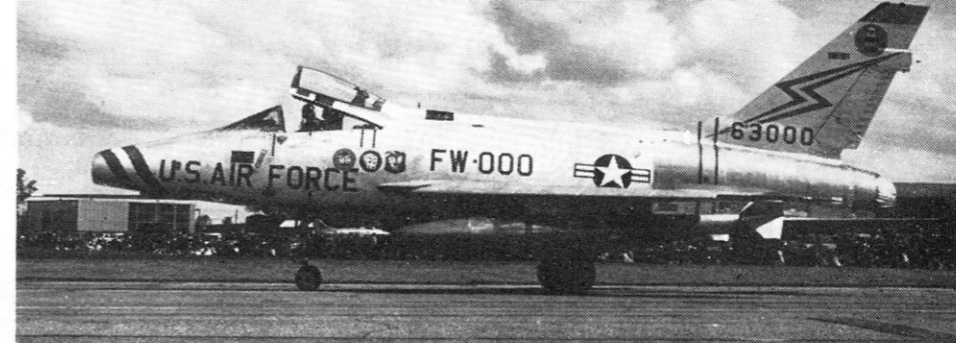
Training aircraft were silver with either yellow wing and fuselage bands or areas of 'solid' orange dayglo. There were quite a number of Meteor 7s about in the former scheme like WA714. Already the Jet Provost T3 was in use in some numbers. 2 FTS had them, such as XM403 which had dayglo orange nose, rear fuselage, tailplane, and wing areas. '32' appeared on the nose in black. Others in use were XM410:41 and XM414:45.

There were lots of Vampire T11s about in high speed silver finish with orange dayglo. When they left the makers they wore 3 ft wing roundels and 18 inch diameter boom roundels. A 27 inch wide stripe along the wing trailing edge led to the wing tip dayglo areas which extended from the tip to half way across the roundel on the upper surface and ended between the serial prefix and numbers under the wing. Tail dayglo began two feet aft of the fuselage roundel. The fins were dayglo, too, but the tailplane was left silver. No 5 FTS was flying T11s in a slightly modified scheme such as XD444 with a black AG on its nose, and red nosewheel door with a white stripe down the centre.

Piston Provosts were still in use with some units, XF888:M-K of 6 FTS having the school badge on the dayglo nose and black letters flanking the roundel, with 'M' aft on both sides. Wing tips, flaps, the tailplane tips and rear fuselage were dayglo orange.

There were many detailed variations in the manner of application of dayglo to trainers but basically they had applications to the same areas. An unusual variation concerned Meteor 7 WG987 which had a dark blue fuselage serial on its silver and dayglo finish. It served 5 FTS for the training of long-legged pilots.

Right: F-100D '000' famed leader of the Wing at Wethersfield in 1960. It carries the red-yellow-blue colours of the three wing squadrons on the tail and the three squadron badges on the fuselage.



Light transports were about in plenty. Usually this meant the Anson, for the beloved Annie was still very much part of the scene. If you were lucky you could still see a Mk 12 series ii. PH845 was one such, silver with dayglo cowlings, nose, wing tips, fin and rear fuselage. She flew for HQ 23 Group. An Anson 19 in use was the all-silver two-star VM358. A Mk 21 transport was VV968, silver with dayglo trim. More polished in the literal sense were the Devons of the Metropolitan Communications Squadron. VP958 had the unit's fin diamond, dark blue cheat line, dark blue serials, and MCS lettering in blue on the roof and a white fuselage top. Some of the Metropolitan Communications Squadron machines still carried unit code letters which had largely disappeared in 1953. Anson VL353 had CB aft in red with H ahead of the roundels and the MCS fin diamond. An unusual sight was Duxford Station Flight's Anson WD416

which had pale blue bands around its fuselage and wings and the black spinners which many Ansons had.

A blue cheat line 'lightning flash' was usual on the heavier machines. Beverley XB288:U of 47 Sqn had silver/white/blue trim with '47' in white on a green fin diamond, and '288' on the fins in black. An exception to the usual paint pattern was seen on Hastings TG501 of ETPS. It was silver with the top half of the fuselage white above a red dayglo line 5 inches wide and flanked by a 1 inch blue one. Fixed tailplans areas were orange dayglo, as also were the extreme wing tips and fin. A thin silver outline to the fin flash was retained, the remainder being white. The ETPS badge was on the starboard side of the nose.

American aircraft in Britain were basically in silver/natural finish. Mildenhall had recently become the terminus for transport flights to the UK, and on April 27, 1960, I had a look over a C-124C 52-1041A/21041 on the dispersal area where once that famous Wimpey OJ-F used to frequently stand. It was silver with the MATS band across the tail. Lettering was then all black, although some aircraft already had very dark blue lettering. The MATS badge was on the rear fuselage around which an orange dayglo band was painted. The nose, too, was dayglo. Fuselage roof was white and the nose radome black. No 1607 ATW(H) operated the machine. The Globemaster II seemed in those days a massive aeroplane for it was 38 ft up to the cockpit and 48 ft to the tip of the tail.

Another transport newer to the local scene was the Douglas C-133A. No 62006 of the 34th Sqn, 1607 ATW(H) was put at my disposal to record. It, too, was silver, with white fuselage top and black nose radome. All lettering was black and, like the C-124, this aircraft had a rear fuselage dayglo band and dayglo nose.

Douglas B-66s were stationed at Sculthorpe. On their natural finish they wore a tail flash, blue if they hailed from the 86th Bomb Sqn; 40480 had a black 'N' on the fin, and 40490 had 'R' on the rear fuselage. No 85 Sqn aircraft had a yellow flash, 54-483/40483 wearing a yellow 'R' on the rear fuselage outlined white. No 30483 of 85 Sqn had a black stencilled 'S' on the rear fuselage and, like the others, buzz markings, too, which in this case were BB-483.

F-100Ds equipped the 20th TFW at Wethersfield, its silver aircraft having a bold lightning flash on the fin in the squadron colour. 56-3007A, an F-100D-65-NA, had a yellow fin flash and

Continued on page 489

A DECADE OF JET PROVOSTS—

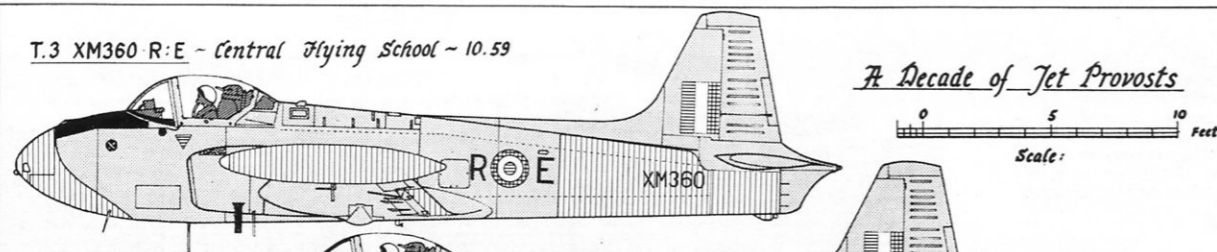
During the ten years under review this month trainer aircraft markings have evolved through four basic phases. First came the silver and orange dayglo pattern where the dayglo areas were 'solid' and the special paint was applied to nose, tail and wing tips. Then came the period of strip dayglo still applied to many aircraft in elaborate taped patterns much in evidence still on many Varsitys. A variation existed—and still exists—whereby trainers were painted overall Light Aircraft Grey depicted here on XN594. Finally has come the latest grey-red-white scheme shown as carried by XN509 of 3 FTS, who kindly placed the machine depicted at the disposal of Alf Anderson for his drawing. XN461 carries the strip dayglo as first applied with only two nose stripes. XP626 has the broken strips applied to many 1 FTS aircraft. Note that two of these extend further back than usual under the tailplane. The strips are generally 8 inches wide. For his assistance with this drawing project, we would like to thank Flight Lieutenant Gibson of RAF Leeming.

For drawings turn page



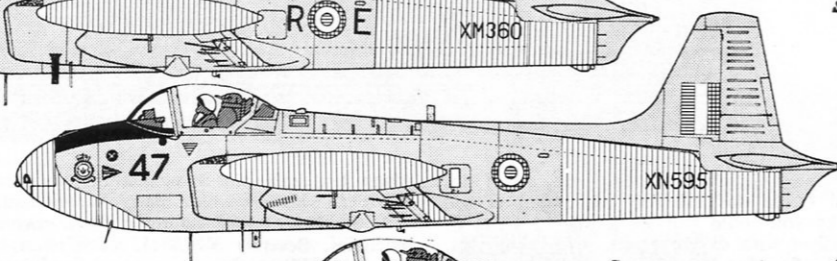
Above, top to bottom: A Douglas B-66 Destroyer of the 47th Bomb Wing Sculthorpe 55-309A/50309 belonging to the 84th Sqn. It had a red fin flash and a three foot tall 'T' in red on the fuselage outlined black. F-100F-15-NA 56-4019A/64019 of the Danish Air Force seen at Wethersfield on May 28. Silver finish with dark red cheat line and black numbering. Held by 727 Sqn. F-100F-15-NA 56-3997A/63997 of the Turkish Air Force also at Wethersfield on May 28, 1960. All silver with black numbers. Red square on fuselage outlined white. Black animal head with blue and white eyes, red tongue, white teeth faced forwards on both sides of fuselage. Red-white-red bands around nose intake.

T.3 XM360 R:E - Central Flying School ~ 10.59

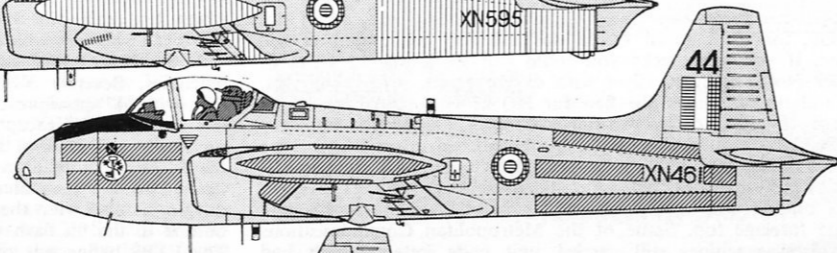


A Decade of Jet Provosts

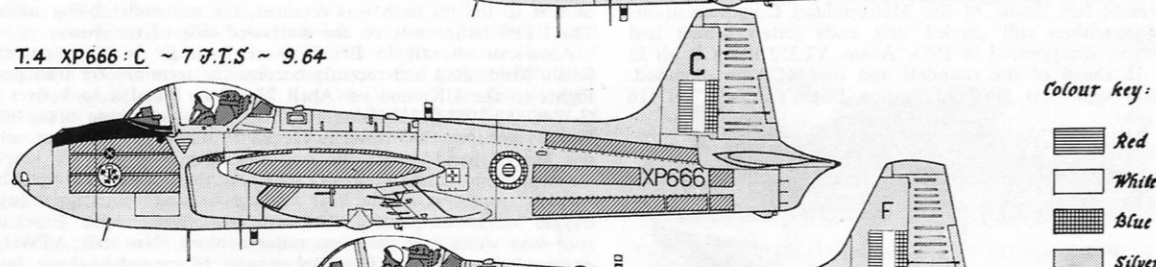
T.3 XN595:47
2 J.T.S ~ 9.61



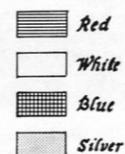
T.3 XN461:44 ~ 7 J.T.S ~ 5.64



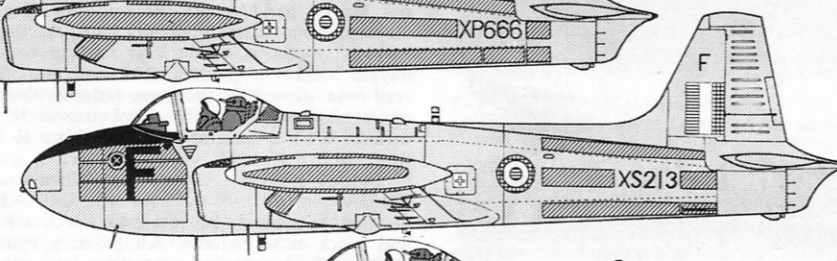
T.4 XP666:C ~ 7 J.T.S ~ 9.64



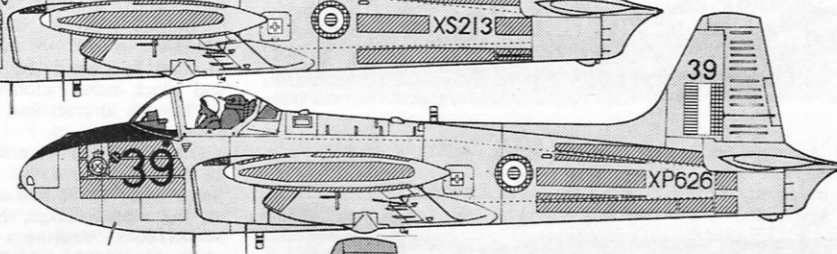
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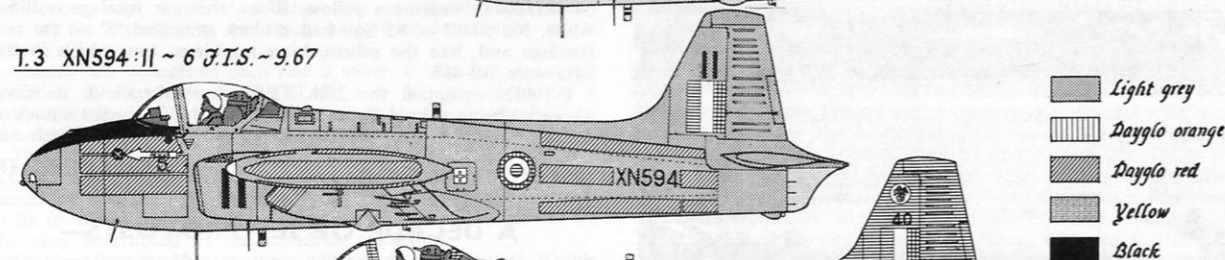
T.4 XS213:F
School of Air
Warfare ~ 9.64



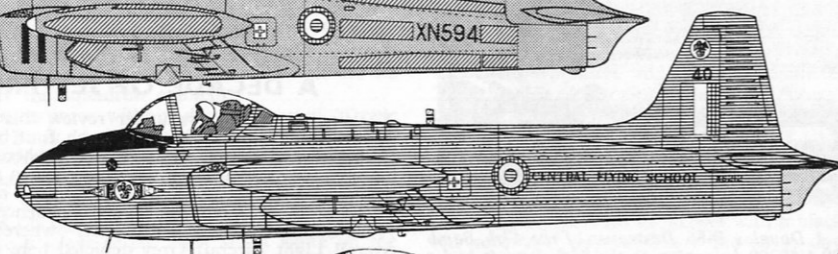
T.4 XP626:39 ~ 1 J.T.S ~ 5.66



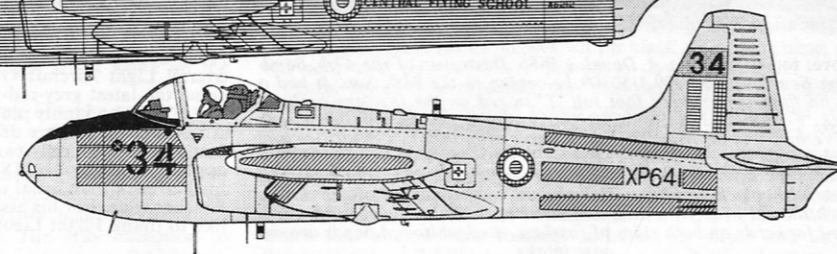
T.3 XN594:11 ~ 6 J.T.S ~ 9.67



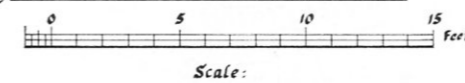
T.4 XS212:40
C.J.S. Red Pelicans
team ~ 5.68



T.4 XP641:34 ~ 2 J.T.S ~ 8.68

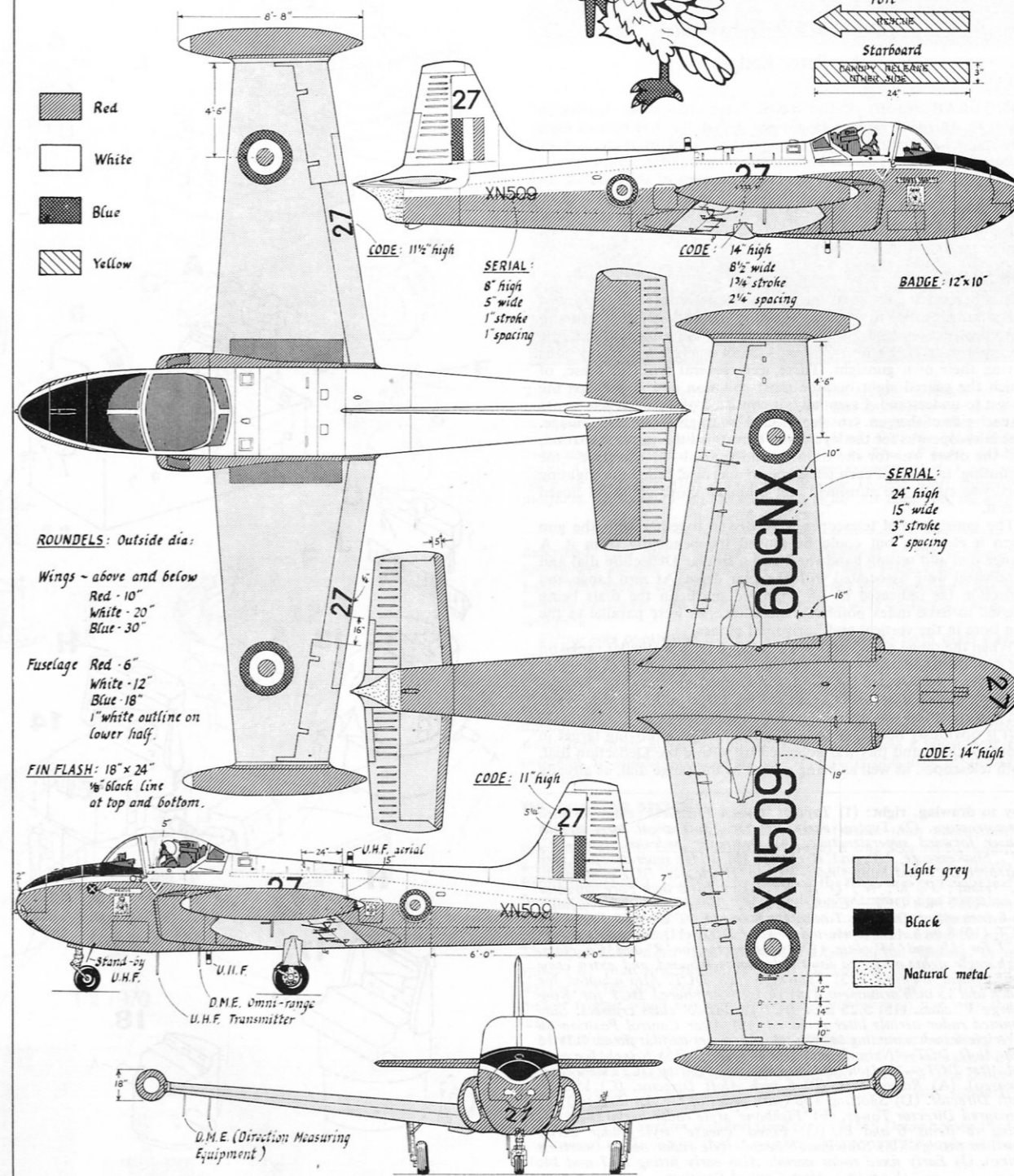
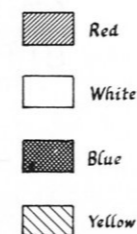
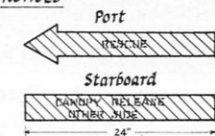


Jet Provost T.3 ~ 3 F.T.S. 1969



3 F.T.S. UNIT CREST
Displayed on standard surround
Motto: "ACHIEVE"
Gold - Red claws and tongue.

NOTICES



ROUNDLES: Outside dia:

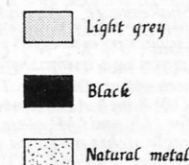
Wings - above and below
Red - 10"
White - 20"
Blue - 30"

Fuselage Red - 6"
White - 12"
Blue - 18"
1" white outline on lower half.

FIN FLASH: 18" x 24"
1/8" black line at top and bottom.

CODE: 11" high

SERIAL:
24" high
15" wide
3" stroke
2" spacing



Fire Control

A GUIDE FOR MODELLERS OF BRITISH WARSHIPS,
MAINLY 1939-45 PERIOD

by Peter Hodges

REGULAR readers of the recent Naval modelling articles in *Airfix Magazine* will no doubt recall that the first part of each conversion has dealt with the background of the ships or class under discussion, and given details of the equipment standard to them.

This month, to avoid constant recapitulation of these details in future articles, the subject of Surface Fire Control Directors will be dealt with, so that modellers can recognize the various types and understand their functions. Anti-aircraft directors will be given similar treatment in due course.

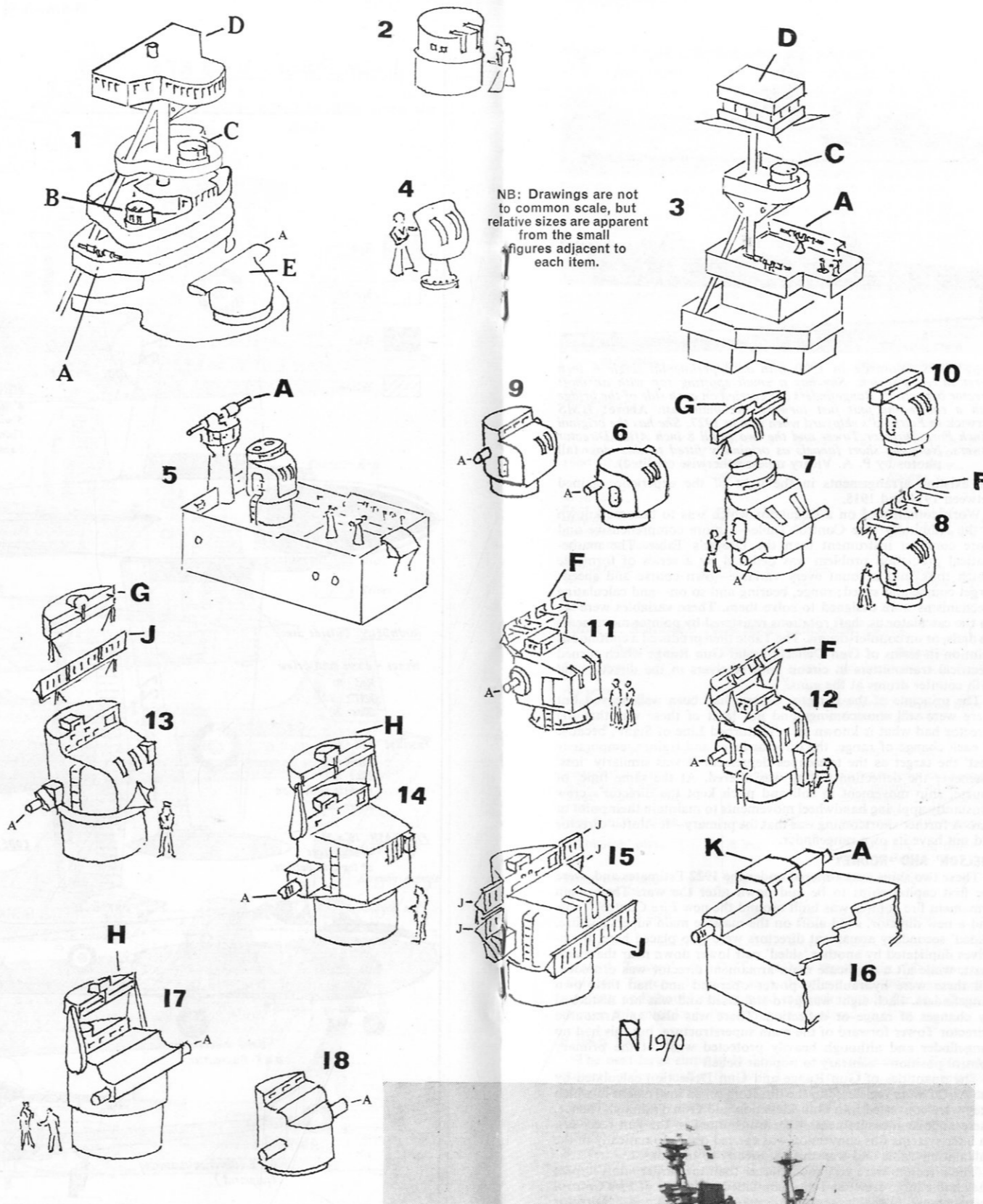
GUN SIGHTS

It is beyond the scope of these notes to delve into the history of gun aiming. Suffice to say that concurrently with improvements in gun construction, and advances in ammunition and ballistics, the closing decade of the 19th Century saw all medium and heavy guns having their own gunsight. There were several types of these, of which the geared sight became most common and is perhaps the easiest to understand. Essentially, it consisted of a pair of telescopes on each side of the gun, cross-connected by a sight beam and linkage. One telescope was for the layer, who controlled the gun in elevation, and the other was for the trainer, who trained—or traversed—the mounting. In front of each telescope an aperture, called the 'sighting port' was cut in the gunshield and a hinged cover could be closed over it.

The gunsight and telescopes were driven together with the gun when it elevated, but could be moved independently from it. A Range dial and setting handwheel and a similar Deflection dial and handwheel were associated with the gear drive. At zero range and deflection (as indicated by an engraved mark on the dials being aligned to fixed index pointers), the telescopes were parallel to the gun bore in the vertical and horizontal planes.

When the range handwheel was moved to set a particular range on the dial, the drive depressed the telescopes independently of the gun. The layer then elevated the gun (at the same time elevating the telescopes) and when he could again see the target in his field of view, the gun elevation was correct for the range set.

It is obviously necessary to 'aim off' ahead of a moving target in order to hit it, and this was achieved by setting the Deflection dial. Both telescopes, as well as being geared to the range dial, as already



Key to drawing, right: (1) Typical 'Queen Elizabeth' class forward superstructure. (2) Typical early director. (3) Typical early 6 inch cruiser forward superstructure. (4) Destroyer pedestal sight—'V', 'W', 'Shakespeare', 'A', and 'B' classes. (5) Bridge superstructure with destroyer DCT and Rangefinder—'C' to 'H' classes. DCT common to 'I', 'Tribal', 'J', 'K', 'N', 'O' to 'V' classes. (6) 8 inch Fore Director Tower. (7) 8 inch DCT—'Exeter', 'York', 'Dorsetshire' and 'Norfolk'. (8) 8 inch After Director Tower. (9) 8 inch FDT converted to After DCT. (10) 8 inch ADT converted to After DCT. (11) Special destroyer DCT for 'L' and 'M' class. (12) 'K' Director for 'Z' and 'Ca' class. High angle sights outboard low angle sights inboard, and extra crew compartment forward. (13) Typical 6 inch DCT. Also adapted for 8 inch and 15 inch armament. (14) 14 inch Armoured DCT for 'King George V' class. (15) 5.25 inch DCT for 'Dido' class cruisers. Side mounted radar aerials later removed (16) After Control Position on 'X' triple 6 inch mounting in 'Fiji' class cruisers as first fitted. (17) 16 inch Aloft DCT—'Nelson' and 'Rodney' only. (18) 6 inch Forward and After DCTs—'Nelson' and 'Rodney' only. (After DCTs were later removed). (A) Rangefinder. (B) 6 inch Aloft Director. (C) 15 inch Aloft Director. (D) Spotting Top (with pedestal for AA director) (E) Armoured Director Tower. (F) 'Fishbone' style radar aerial (wartime fitting to items 6 and 8). (G) Fixed 'cheese' style radar aerial (wartime fitting). (H) Stabilised 'cheese' style radar aerial (wartime fitting). (J) Early fixed radar aerial. Also early fitting to 7 and 14. (K) 6 inch After Control Position.



Top: HMS Caprice with 'K' director on the bridge, common to 'Z' and 'Ca' classes. The DCT for 'L' and 'M' class destroyers was similar in appearance. **Above:** A pre-war single 4.7 inch mounting in a destroyer (actually Ambuscade of the 'A' class). Note the black sight beam and the trainer's receiver instrument dial. **Foot of page:** HMS Royal Oak in 1938 with the standard arrangement of that period. Note the two 6 inch Aloft Directors below the 15 inch Aloft Director platform. The director on the mainmast is for AA control of the after twin 4 inch guns.

described, also had a vertical pivot, movement of the deflection handwheel angling the telescopes laterally with respect to the gun bore. This time it was the trainer who moved the mounting itself to re-sight the target, and when both telescopes were on-target, the gun was fired.

Firing was controlled locally, and alterations to both dials were made by judging the errors in the fall of shot, the initial range having been set on the range dial from the rangefinder.

There were several distinct disadvantages in this method of control. Because the guns were fired separately, it was often very difficult to establish which were one's 'own' shell splashes, and which were from other guns, making gunsight corrections a considerable problem. In addition, the target was frequently obscured by smoke and spray.

THE DIRECTOR SYSTEM

Fortunately, the viability of electrical (rather than percussion) firing had already been established, and so it was decided to mount a Master Sight at some position high in the ship and fit a Master Firing trigger to it. The master sight took the form of a gun sight and functioned in the same way, but when it was trained and elevated, the angular movements were transmitted to electrical repeaters—called 'receivers'—at the layer's and trainer's positions at each gun. The layer and trainer then followed the transmitted readings by a system of 'matching pointers'. Indicator lamps told the Director layer when the guns were ready, and he fired them together from his master trigger when his telescope cross-wires were in line with the target.

Mounting the Director sight in this fashion made it necessary to correct each gun for its difference in position and this was done by incorporating special mechanisms in the gun receivers. The difference in height between the guns and the director was similarly allowed for.

This Director System was first tried out in HMS Orion before 1914 and proved so successful that it was rapidly adopted throughout the Fleet.

Continued on next page

Fire Control—continued

EARLY ASSOCIATED EQUIPMENT

At this time, the only other Fire Control instrument of any great significance was the optical rangefinder. This was similarly mounted high in the ship, and was trained on to the bearing of the target, ranges being sent to the director sight to be applied to its range dial. There was no 'predictor' as we know it today, and much reliance was placed on the estimations of target course and speed as observed from the Spotting Top. The latter was always mounted as high as possible on the foremast and took the form of a large be-windowed compartment. From here the fall of shot was 'spotted' and corrections passed to the director sight.

A number of small instruments were produced in an attempt to accurately calculate the 'aim-off' required to hit a moving target which might be thousands of yards distant, but the first successful combined device was invented by Admiral Dreyer. This instrument, known as the 'Dreyer's Table', was installed in battleships and cruisers, proceeding through a number of marks as successive improvements were made to it.

ORIGINAL CAPITAL SHIP SYSTEMS

Figure 1 shows the appearance of the forward superstructure of HMS *Queen Elizabeth* before her pre-war modernisation and this is typical of battleships and battle-cruisers of the period. The Aloft Director was the primary control position with the Armoured Director as the alternative. The latter could also control the after group of turrets in 'Divided Control'.

(1) **The Spotting Top:** In battleships, this was usually of 'T' shape, with the tail of the 'T' projecting forward to form the spotting position for the 15 inch armament, while the arms were for the 6 inch secondary armament.

The Aloft Director: The main armament Aloft Director consisted of a non-rotating drum shaped mounting, about 7 ft in diameter, carried on a platform immediately below the Spotting Top on the foremast. Within the fixed casing, the director sight was mounted on a pedestal and when trained around, it drove the rotating cupola top. A pair of telescopes were carried on the moving part, set by range and deflection drives, and sighted through apertures rather like the sighting ports on a gun mounting.

Secondary Armament Directors: These were very nearly identical, and were mounted either high in the bridge structure to port and starboard or on their own mast platform, whence they directed the fire of the secondary batteries.

The Armoured Director: This was a large tower, mounted like a gun turret, and positioned between 'B' mounting and the bridge. It was trained by hydraulic power, weighed about 29 tons and carried its own rangefinder. Within the tower, and sharing a common centre of rotation, was a standard director sight, capable of independent movement in training over a total arc of roughly 20 degrees. The trainer of the Armoured Tower was unsighted below, and having been given the initial bearing, thereafter trimmed the tower training to the centre bearing of the director sight by aligning index marks carried on each.

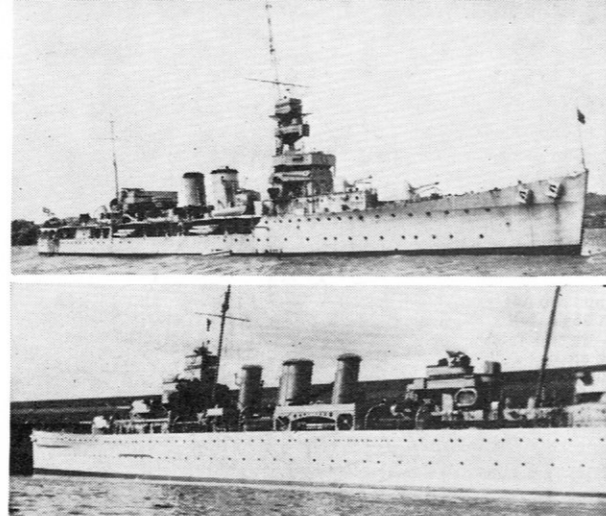
Rangefinders: From the above, it will be seen that only the Armoured Director had its own rangefinder, the range for the Aloft Director and for the secondary armament directors being obtained from rangefinders elsewhere. There were usually two or three of these—one on each side of the bridge and one on the centre line. In gun mountings of 8 inch calibre and above, each gunhouse also had a rangefinder carried in the rear for use in the event of damage to the directors.

DIRECTORS IN SMALLER SHIPS

All the cruisers of this period had similar, but smaller installations. Like the capital ships, they had a Dreyer's Table and two or three rangefinders but only one director in the aloft position, beneath the spotting top. Figure 3 shows the arrangement common to the 'C', 'D', and 'E' class 6 inch gun cruisers as well as the 7.5 inch gun ships. In destroyers, the set-up was even simpler, consisting of a small rangefinder on the bridge, a diminutive Pedestal Sight (Figure 4) and a simple range calculator.

POST 1919 DEVELOPMENTS

Immediately after the first world war, a committee was formed to investigate the question of gun fire control with a view to improving



Top: HMS *Diomed* in 1930 with an experimental single 6 inch turret in 'A' position. She has a small spotting top with an aloft director beneath it. Rangefinders are carried on each side of the bridge with a centre-line unit just forward the mainmast. **Above:** HMS *Berwick* in Fairfield's shipyard when new in 1927. She has the original 8 inch Fore Director Tower and the two small 8 inch After Director Towers. Note the short funnels as originally fitted to this class (all photos by P. A. Vicary unless otherwise credited).

the existing arrangements in the light of the experience gained between 1914 and 1918.

Work commenced on a calculator which was to become known as the Admiralty Fire Control Table—a more comprehensive and more compact instrument than the Dreyer's Table. The mathematical prediction problem was deduced by a series of formulae which took into account every variable—own course and speed; target course and speed; range, bearing and so on—and calculating mechanisms were designed to solve them. These variables were set on the calculator as shaft rotations registered by pointer movements on dials, or on counter-drums. The Table then produced a continuous solution in terms of Gun Deflection and Gun Range which turned electrical transmitters in circuit with receivers in the director and with counter drums at the guns.

The principle of the Director System had been well proved but there were still shortcomings and not least of these was that the director had what is known as a 'Disturbed Line of Sight', because at each change of range, the director layer and trainer temporarily 'lost' the target as the telescopes depressed. It was similarly 'lost' whenever the deflection setting was altered. At the same time, of course, ship movement in roll and pitch kept the director's crew constantly applying handwheel movements to maintain their point of aim. A further shortcoming was that the primary—ie Aloft—director did not have its own rangefinder.

'NELSON' AND 'RODNEY'

These two ships were ordered under the 1922 Estimates and, were the first capital ships to be laid down after the war. Their main armament fire control was built around the new Fire Control Table and a new director, sited aloft on the massive main superstructure. 'Sided' secondary armament directors were also placed here, themselves duplicated by another 'sided' pair lower down near the mainmast, while aft a duplicate main armament director was provided. All these were hydraulically power operated and had their own rangefinders. Each sight was gyro stabilised and was not disturbed by changes of range or deflection. There was also an Armoured Director Tower forward of the main superstructure, but this had no rangefinder and although heavily protected was not the primary control position—contrary to popular belief.

The quantities of Gun Range and Gun Deflection calculated by the AFCT were registered in the directors on an instrument in which they were converted into Gun Elevation and Gun Training. Thence, these angular measurements were transmitted to the gun receivers. In later systems this conversion was carried out automatically in the calculating Table and transmitted directly to the guns.

The directors were very much larger than the earlier 'aloft' types; they had a large crew; and they contained a number of Fire Control instruments. For this reason they became known as 'Director

Table 1: Ships retaining original Directors

Ship/Class	Remarks
'R' class battleships <i>Barham</i> <i>Repulse</i> <i>Hood</i>	Armoured Director Tower, Aloft Directors for 15 inch and 6 inch armament (15 inch only in <i>Repulse</i>) Had an Armoured Director on Spotting Top
7.5 inch cruisers Unconverted 'C' class cruisers	AA ships had AA directors only
'D' class cruisers	<i>Delhi</i> was re-armed with US guns and directors
<i>Emerald</i> <i>Eagle</i> <i>Hermes</i> Early destroyers with Pedestal Sights	Early Aloft Directors to control 5.5 inch armament Mostly converted to Escorts with either AA director or Long Range Warning Radar in place of original sight
<i>Nelson</i> <i>Rodney</i>	Duplicate 6 inch directors abreast mainmast removed early in World War 2. Other 6 inch and 16 inch directors are well modelled in the Airfix kit

Table 2: 8 inch Directors

Ship/Class	Forward	Fig	Aft	Fig	Remarks
<i>Exeter</i> <i>York</i> <i>Dorsetshire</i> <i>Norfolk</i>	8 inch DCT	7	8 inch DT	8	Not changed
'Kent' class 'London' class (first fitting)	8 inch Fore Director Tower	6	8 inch After DT	8	Not changed in <i>Shropshire</i> , <i>Devonshire</i> , <i>Sussex</i>
<i>Australia</i> <i>Kent</i> <i>Berwick</i> <i>London</i> (on modernisation)	8 inch DCT (new style)	13	8 inch DCT	9	Original 8 inch FDT modernised and resited aft
<i>Cumberland</i> <i>Suffolk</i>	8 inch FDT	6	8 inch DCT	10	Original 8 inch ADT converted to 8 inch DCT

Table 3: Standard Type Main Armament DCTs

Ship/Class	Calibre	Fig	Remarks
<i>Enterprise</i>	6 inch	13	Prototype
<i>Warspite</i> <i>Queen Elizabeth</i> <i>Valiant</i> <i>Renown</i>	15 inch	13	Original Armoured Director Tower resited aft
'King George V' class	14 inch	14	Forward and aft
'Leander' class 'Arethusa' class 'Southampton' class 'Fiji' class and later 6 inch classes	6 inch	13	Forward only, but second DCT mounted aft in <i>Gloucester</i> , <i>Liverpool</i> and <i>Manchester</i> . Later removed from <i>Liverpool</i>
'Edinburgh' class	6 inch	13	Forward and aft. Still fitted in <i>Belfast</i>
'Dido' class and 'Improved Dido' class	5.25 inch	15	Forward only
Modernised 8 inch cruisers	8 inch	13	See table above

Control Towers'—or DCTs—rather than plain 'Directors' or 'Director Towers'. It will be seen, therefore, that DCT has a special meaning and should not be used indiscriminately for any director, though this mistake is frequently encountered in print.

8 INCH CRUISERS

The next large ships to be laid down were the seven 'Kent' class cruisers ordered under the 1924 Estimates. They, too, adopted the new fire control arrangements, having a specially designed power operated director weighing 4½ tons called the 8 inch Fore Director Tower on the bridge, working with an improved model of the AFCT.

Divided Control in 8 inch ships: The 8 inch main armament could be divided if necessary, when the after turrets were controlled by a smaller 3½ ton After Director Tower. This layout was repeated in the four 'London' class vessels but the two 'Dorsetshire' class ships as



Above: The Cruiser *Norfolk* in 1945 shows the extensive wartime alterations. The bridge has been rebuilt and radar is added to the 8 inch DCT. The starboard sheet anchor has been removed and many of the lower portholes blanked off (Imperial War Museum).

well as *York* and *Exeter* received a much bigger unit known as the 8 inch DCT. It weighed over 11 tons.

Of the last four, only *Norfolk* survived the war and retained her original 8 inch DCT to the end, backed up by an 8 inch DT aft. Note that the more important unit was a DCT while its subsidiary partner was a DT.

6 INCH CRUISERS

In 1930, the first of a long run of 6 inch gun cruisers was ordered, for whom a new 6 inch DCT was designed and the prototype was installed in the existing cruiser *Enterprise*. This weighed about 12½ tons and conforming to the new standards, was power operated. It had a much improved gyro stabilised sight, a range finder, a number of fire control instruments and a crew of seven or eight.

6 inch Divided Control: The 'Leander' class, the 'Arethusa' class, *Southampton* and *Newcastle* had no after director, but instead were fitted with a sight called simply 'the After Control'. The next three ships—*Sheffield*, *Glasgow*, and *Birmingham*—could control their after group 6 inch from the after AA director, while *Manchester*, *Liverpool*, *Gloucester*, *Belfast*, and *Edinburgh* were given a second DCT for the same purpose.

When the 'Fiji' class emerged, they had a special After Control Position built on to 'X' turret, but during the war this mounting was removed in almost all ships and a separate control for the remaining 6 inch turret aft was not justified. Instead, the after AA director was modified to a Dual Purpose rôle, and this became the standard layout, to which most 6 inch cruisers eventually conformed.

Adaptations of the 6 inch DCT: With modifications to suit its controlled weapons, this DCT was linked to 15 inch, 14 inch, 8 inch and 5.25 inch guns. A good deal of juggling went on in the older vessels. The modernized capital ships remounted their old Armoured Director aft for divided control of their 15 inch mountings (as seen in the Airfix *Warspite*) and similar transfers were made in some 8 inch cruisers when refits permitted. Details of these changes can be seen in the relevant Tables.

INTER-WARS DESTROYERS

The somewhat rudimentary control system common to the Fleet destroyers of 1914-18 vintage continued to be fitted in the new classes which commenced with *Amazon* and *Ambuscade* in 1926, but design work had already started on a more comprehensive system based on, but naturally much smaller than, the big ship set-up.

This was ready for the 1930 'Crusader' class and consisted of a 'Destroyer DCT' and a separate rangefinder. The DCT was a miniature tower mounted on the bridge; abaft and above it, an open rangefinder was carried on a pedestal. Both were trained on to the bearing of the target, firing being controlled from the gyro stabilized sight in the hand-operated DCT.

Other Destroyer DCTs: The 'Destroyer DCT' became the standard fitting for a number of decades with only few exceptions. Amongst these were the 'L' and 'M' class ships which had a special DCT peculiar to themselves; and the 'Z' and 'Ca' classes who were given their own power operated tower.

Later destroyer classes had a Dual Purpose director which will be covered under the general heading of AA fire control.

Small Ship Fire Control Calculators: When the 'Crusader' class destroyers were built, their new DCT and its rangefinder partner worked in conjunction with a calculator called the Admiralty Fire Control Clock. This used exactly the same principles as the larger AFCT, but was designed for fitting in small ships. It progressed through a number of marks—with many sub-models—and was also used to control the secondary armament of capital ships and for the divided control of the main armament of the later classes of 6 inch cruisers.

An even smaller edition was known as the Admiralty Fire Control

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Making an Osprey

Hart or Demon conversion
by Alan W. Hall



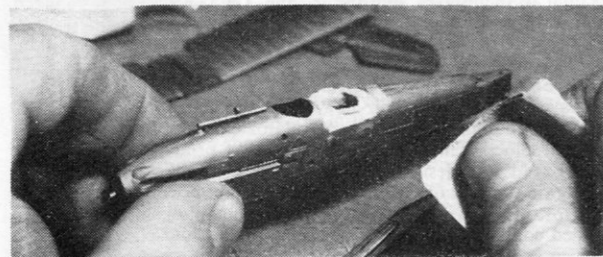
Above: A pre-war Osprey floatplane from one of the Cruiser Squadron Flights. Note the simple codes on the fuselage sides when compared with the model of the landplane version (Photo via John Rawlings).

READERS will no doubt remember my previous remarks that the Airfix Hart/Demon kits are among the most useful of all of the many models made by this company. The number of conversions that come from direct surgery or from the invaluable pieces in the kits are legion. Unfortunately the Hart is now something of a rare bird as the moulds were re-tooled to produce the Demon and there are now few of the Hart kits left in the shops.

My conversion this month can be done from either. Anyone having a Hart kit will be able to save himself the trouble of reshaping the rear cockpit but this work is very simple and should not present too many difficulties for the beginner. In fact this whole conversion is suitable for the modeller who has not had great experience and there are two choices open to produce either the land or seaplane version of this time honoured light bomber.

The Hawker Osprey was the Navy's version of the Hart. It was one of many variants to come from this basic machine, such as the Hardy, Hind and Hector, to name just three. It differed in being convertible from a landplane to a seaplane, having naval equipment such as a deck arrester hook, and a reshaped fin and rudder. All of the Navy's carriers had squadrons serving on board including No 800 in *Courageous* and *Ark Royal*; No 801 in *Furious*; No 802 in *Glorious* and No 803 in *Eagle*, *Hermes* and *Ark Royal*. The seaplane version, used mainly for reconnaissance duties, served with Catapult Flights in the China, East Indies, Mediterranean, West Indies, South African and Home Fleet Cruiser Squadrons and with the capital ships of the Home Fleet. No 24 Sqn RAF also had Ospreys—a fact not generally known. The last of 129 Ospreys built for the Fleet Air Arm (K5767) was delivered in October 1935 and the aircraft served as front line equipment right up to the beginning of the war when No 803's Ospreys were replaced by Skuas.

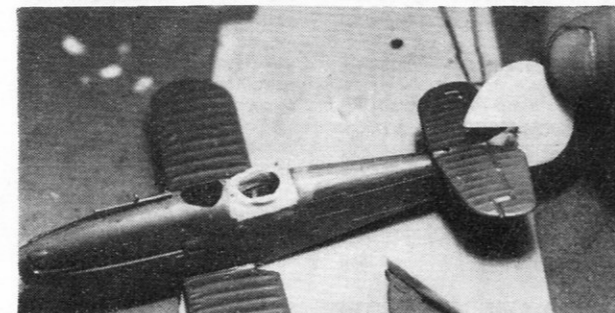
The conversion work is straightforward, needing minimal skill to make a presentable job, which, if the seaplane version is considered, also provides a very notable change in outline. The floats from the Airfix or Frog Supermarine S6b kit are near perfect, being only slightly too long. The changed fin and rudder can be easily made from balsa or plastic card and the reshaping of the gunner's cockpit is a simple job. Painting is a little more difficult as here the many and varied colour schemes employed by the pre-war squadrons can present difficulties, particularly on the landplane versions of the Osprey. The seaplane is, however, an



Above: Rubbing down the clear dope and talcum powder filler around the rear cockpit additions.

easy job and I would advise the beginner to concentrate on this conversion.

Reference material was not particularly easy to come by as not many of the standard works of reference such as Thetford's *British Naval Aircraft since 1912* show anything but the landplane version. I had a lot of fun looking through pre-war magazines and cuttings to find what I wanted and they did provide black and white illustrations to prove what I knew in theory about this period. In all cases I found that the seaplane version had the simplest of large side codes and serials—all in black. The landplane, however, had many variations and I chose an Osprey of No 802 Squadron serialised K3643, coded '549', which had a yellow 'saddle' aft of the rear cockpit, a blue fin and wheel covers and an intricate pattern of yellow and blue lozenges enclosed in two yellow bands on the wings. To make things more difficult the code '549' on the saddle was black outlined in white—a most difficult job to paint by hand.



Fitting the new fin and rudder which is made from balsa or thick plastic card. Fin can be cut and cemented separately if desired.

STAGE 1 Follow the kit instructions in the early stages of construction of this model. Make up the fuselage, inserting the propeller mounting, and leave this to dry out thoroughly before attempting to re-shape the gunner's cockpit. Make a vertical cut fore and aft of this area and cut out a square shape using the saw and knife to finish off the operation before sticking a small block of balsa, which can stand proud of the extremities, in place. When dry shape this to the fuselage section.

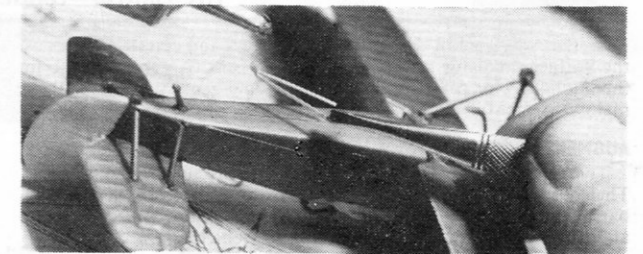
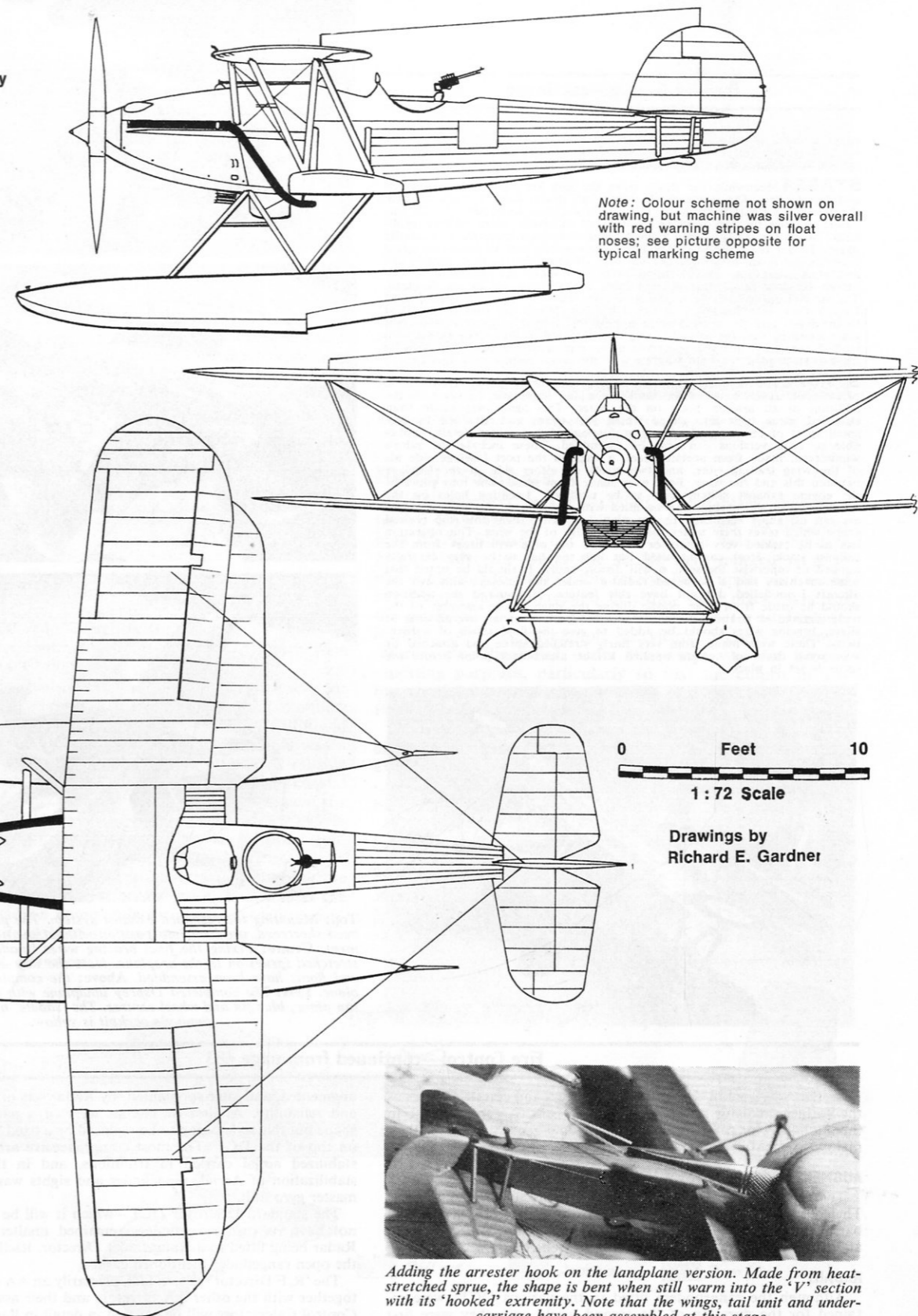
STAGE 2 Using a drill cut through the balsa block to make a hole suitable for taking the Lewis gun ring removed earlier. Alternatively, make one up from scrap plastic or else use one cut from another kit. In my case I found that the one cut from the Demon kit was difficult to reshape so I used a gun ring taken from the DH 4 conversion in *Airfix Magazine* three months ago. The new part was cemented in place, allowed to dry and then the whole area was covered in a mixture of clear dope and talcum powder filler before a final shaping with fine sandpaper was given. The Scarff ring and Lewis gun can be mounted at this point or left till later at the discretion of the individual.

STAGE 3 Next, add the tailplane. Mark out the fin and rudder shape on a sheet of 1/4 inch balsa, cut this out with a fret saw and shape it into an aerofoil section. The fin can be cut from the rudder when completed, the

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AIRFIX magazine

Hawker Osprey



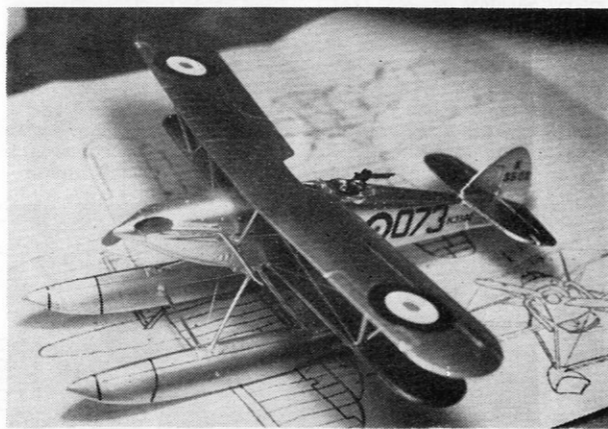
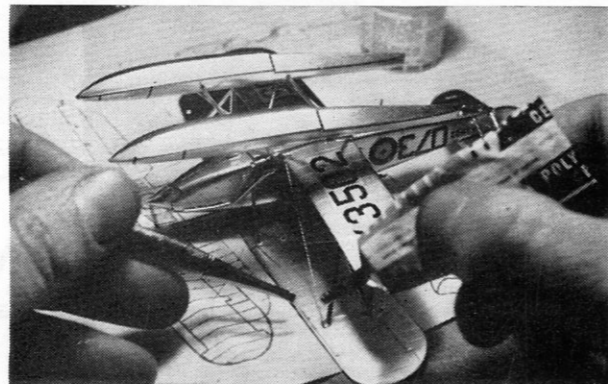
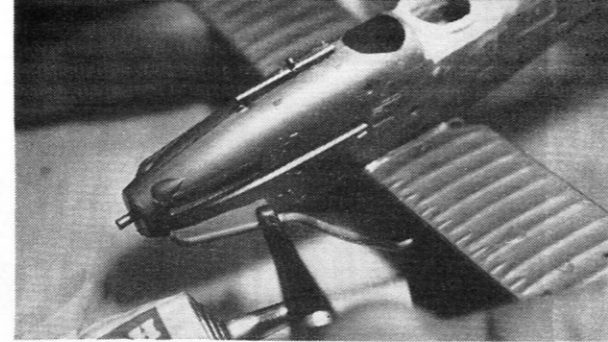
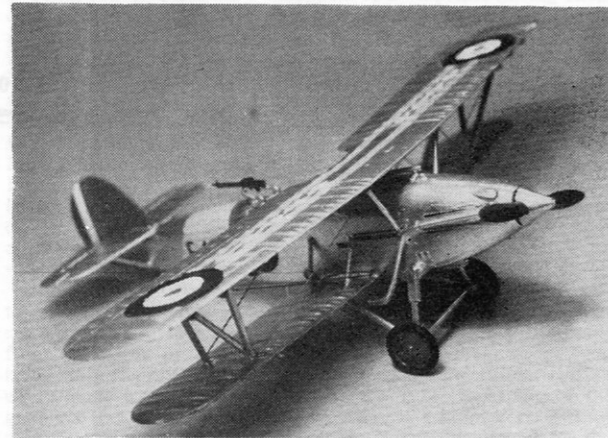
Adding the arrester hook on the landplane version. Made from heat-stretched sprue, the shape is bent when still warm into the 'V' section with its 'hooked' extremity. Note that the wings, tail unit and under-carriage have been assembled at this stage.

Hawker Osprey—continued

edges rounded off and stuck back again before the whole assembly is fixed to the fuselage. On completion a coat of filler is applied and the structure rubbed down smooth before adding the tailplane struts.

STAGE 4 Meanwhile the floats from the S6b kit have been assembled and left to dry. The wings, both upper and lower, can be stuck on plus the telescopic sight in front of the pilot's cockpit. Remember to do this before placing the top wing in position or otherwise there will be problems! Struts for the floats are made from stretched sprue heated in a candle flame. To get the position of the floats correct it is best to make the struts between the floats first. Measure off with dividers the required length, cut and stick these into small drilled holes and leave the assembly to dry before tackling the operation of joining the sections up to the fuselage. The struts for the fuselage to floats join are made in a similar manner and I stuck these into fuselage location holes first. When dry they were joined to the floats and the correct angle applied by a little pressure in the right place ensuring that the assembly was not damaged by too much strong arm stuff. Either leave the model upside down during drying out operations or leave it suspended the right way up with the wings resting on a box lid.

STAGE 5 The landplane undercarriage is assembled as kit instructions. Notable difference between the Osprey sea and landplane, however, is the addition of an arrester hook on the latter. This again was made from stretched sprue bent into shape whilst still warm and attached by two small spots of cement under the rear fuselage. Other minor details applicable to both versions can now be assembled. These include the pilot's windscreen, made from acetate sheet, a step on the port fuselage side aft of the wing trailing edge, and two struts on either side of the fuselage between this and the wing. Both were made from sprue. The long pipes of the engine exhaust system have to be modified. Locating holes on the fuselage under the cockpit can be filled with body putty, the exhaust pipes are cut off short according to the plan and gently bent into the revised shape which takes them under the leading edge of the wing. This operation has to be tackled very gently or otherwise the pipe will break from the exhaust stack. Heat can be used but this too has to be very carefully applied or otherwise the section will distort badly. It should be noted that some machines had a deepened radiator under the fuselage although the aircraft I modelled did not have this feature. If required the addition should be made from scrap plastic during the stage before assembly of the undercarriage or floats. After the model has been given an overall coat of silver, bracing wires should be added to give the final touch of authenticity. These were made from very finely stretched sprue and attached by very small drops of cement applied to the attachment point before the sprue is set in place.



Top: Mounting the reshaped exhaust system. The pipes, after having been shortened, are bent into position without the need of heat treatment. **Centre:** Fixing the final bracing wires (made from fine heat-stretched sprue) on to the seaplane. Note the way in which the struts and floats have been assembled. **Above:** the completed Osprey seaplane. **Left:** The completed Osprey landplane with its multi-coloured top plane, blue fin and wheel centres. The 'saddle' marking aft of the gunner's cockpit is yellow.

Fire Control—continued from page 483

Box. This was used in 'Hunt' class destroyers and certain frigates as the Surface predictor for their twin 4 inch HA/LA guns and also in the gunhouses of capital ships for local emergency control of their main armament.

AUGMENTING TABLES

These were special Tables fitted in battleships and 8 inch cruisers. Their function was to allow the main armament to be used in barrage fire against aircraft targets but they were not 'self-contained' and worked in conjunction with the AA predictor.

RADARS

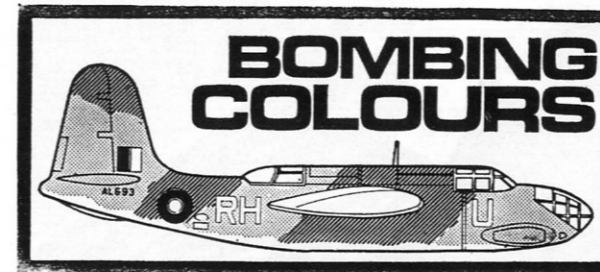
Although the rangefinders fitted in the various DCTs were retained for the duration of the second world war, they were first

augmented, and later supplanted, by Radar sets of increasing range and reliability. At first the aerials were of a narrow rectangular shape but this style began to be replaced by a fixed 'cheese' mounted on top of the DCT. The most comprehensive arrangement had a stabilized aerial carried in trunnions, and in these DCTs, the stabilization of Aerial, rangefinder and sights was derived from a master gyro unit.

The standard Destroyer DCT—which it will be remembered did not have its own rangefinder—remained unaltered, the gunnery Radar being fitted to a Rangefinder Director, itself the successor to the open rangefinder mentioned earlier.

The 'R/F Director' was, in fact, primarily an AA director and this, together with the other AA directors and their associated AA Fire Control Calculators will be covered in detail in Part 2.

AIRFIX magazine



Part 15: Handley Page Heyford

LAST of the biplane heavy bombers, the Heyfords, had a fitting night bombing colour—the dull green known as Nivo. Similarly, so as not to compromise this camouflage colour, the roundels were of the night type without the white inner. This finish was unvarying throughout its flying life which started and all but ended in the 'thirties.

The Heyford entered service with No 99 Squadron in November 1933 and Mk I, IA and II were declared obsolete in August 1939—the month before war was declared—and the Mk III in July 1941.

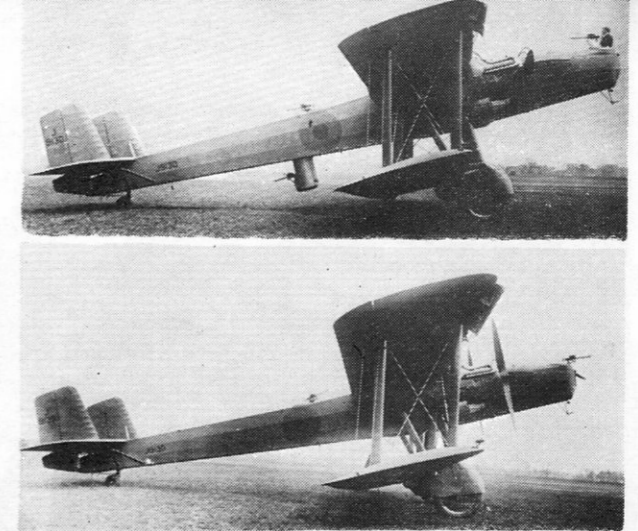
Unit markings

Night bombers, unlike the day bombers, did not display their squadron numbers on fuselage sides, but individual letters were marked on noses and fuselage sides in standard flight colours—'A' red, 'B' yellow and 'C' green—however, since green did not contrast well against the Nivo finish, blue was used by some 'C' flights.

The use of individual letters was a functional necessity for forming in day exercises as the individual serial numbers did not stand out sufficiently well for this, but an additional marking exclusive in Bomber Command to Heyfords was a 'spat trim'. The idea is thought to have originated outside the command with the Vildebeest torpedo bomber/coastal patrol aircraft of No 22 Squadron. This squadron gave the wheel spats on its Vildebeests a colour flash and the Heyford squadrons, having aircraft with wheel spats, followed suit, using the same colours as for their individual letters.

One other unit marking used in some squadrons was the painting of the squadron crest on the nose. This was at the discretion of squadron commanders and was largely dependent on the artistic skill of a squadron member.

Drawings by H. M. Alderson



Above: J9130, the prototype Heyford showing the gun positions and the retractable 'dust-bin' gun position.

Serial Numbers

Serial numbers, in the standard 8 inch black characters for all RAF aircraft, not only appeared 'lost' on the sheer bulk of the fuselage, but did not contrast well on the dark green. Under the wings the serials were marked large in white, but due to shadow this rarely shows up in photos and has given a false impression that they were black. Whereas the serial on the fuselage and rudder was to establish its identity for documentation—servicing records, strength returns, etc—the serial under the wings was for ground reporting purposes, particularly so that the culprit in any breach of flying regulations by low flying could be identified. For this reason they were marked in white to contrast well.

At times the white serials were given a green washable distemper. Heyfords were frequently used for night air exercises in co-operation with searchlights and the white reflection of the characters under the wings was thought to be too much of a give-away to the ground defences.

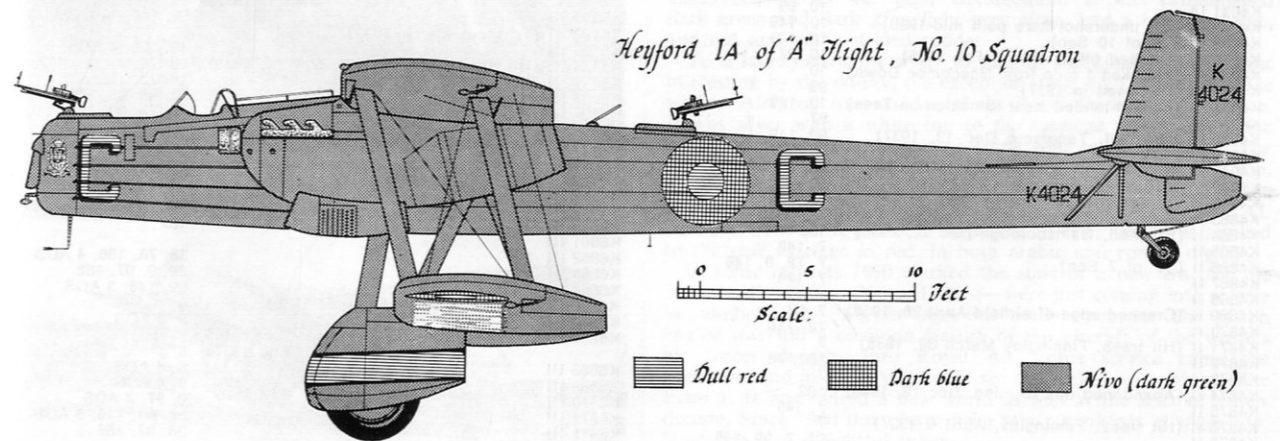
The range of numbers allotted to Heyfords is tabled below.

Serial and Mark Number and Remarks

J9130 Prototype (New Park No 12, Hendon 1932)
K3489 Non-standard
K3490 I (Dispersed in 1939)
K3491 I ('T' of 99 Sqn)

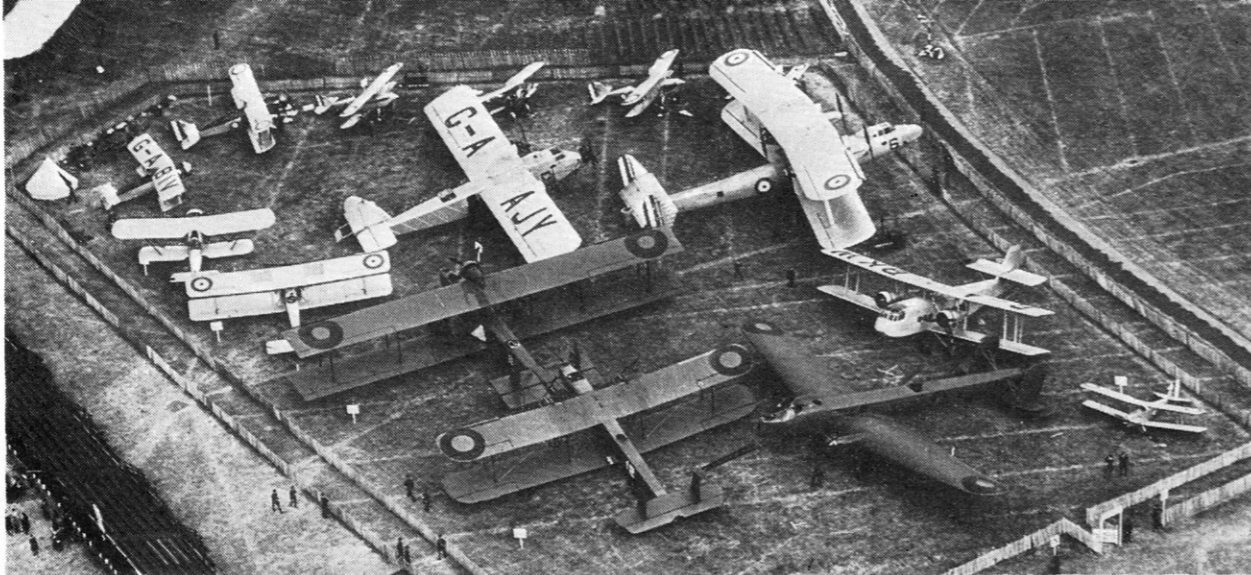
Known squadron and unit service
A and AEE
A and AEE, 149
99, 7
99, 7, 97

Continued on next page



June, 1970

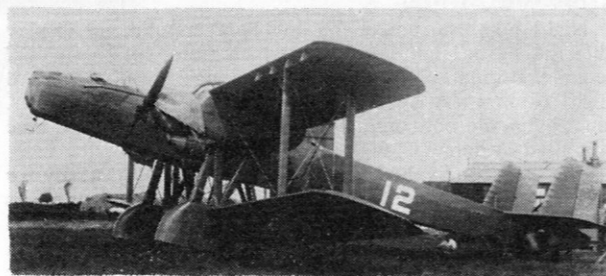
487



Above and below right: Not to be confused with a squadron number, the New Type Park number '12' is seen on the aircraft for the 1932 RAF Air Pageant at Hendon. It can be seen at the bottom corner of the aerial view of the park which emphasises the effectiveness of the green Nivo shade as a camouflage. In front of the Heyford is its rival the Boulton & Paul P32 J9950 (Park No 11) and to its starboard the first of the mono-plane bombers—the Fairey Hendon—subject of the next feature in this series. (MoD photos).

Bombing Colours—continued

Serial and Mark Number and Remarks	Known squadron and unit service
K3492 I-II ('N' of 99 Sqn)	99, 97
K3493 I ('U' of 99 Sqn)	99, 38, 97
K3494 I (Crashed near Bridlington 1939)	99, 149
K3495 I ('V' of 99 Sqn)	99, 149
K3496 I (Struck off charge, Sept 1939)	99
K3497 I ('W' crashed landing, searchlight exercise)	99
K3498 I I ('T' and then 'Q')	99
K3499 I ('X' of 99 Sqn)	99, 38, 97
K3500 I ('R' hit telegraph pole May 1937)	99
K3501 I (Crashed Nov 11, 1936)	99, 38
K3502 I ('M' of 99 Sqn)	99, 149
K3503 I-II-III (New Park No 14, Hendon, 1934)	166
K4021 I-III (Wrecked landing out of fuel, April 1938)	149
K4022 IA (Struck off charge, Aug 29, 1939)	10, 97
K4023 IA ('K' of 10 Sqn)	10, 97
K4024 IA ('C' crashed at night Feb 1936)	10
K4025 IA (Scrapped in 1937)	10, 149
K4026 IA (Undershot Boscombe Down in haze, Oct 1936)	10
K4027 IA ('A' of 10 Sqn)	10, 58
K4028 IA (Scrapped, obsolete 1939)	10, 97
K4029 IA-III (Auto-pilot tests Oct 1937)	166
K4030 IA	97, 58
K4031 IA	10, 99
K4032 IA ('D' undershot flare path mid-1938)	10, 149
K4033 IA ('F' of 10 Sqn)	10, 149
K4034 IA (Ditched off Le Havre, Feb 1936)	10, 97
K4035 IA (Wrecked 1 mile from Boscombe Down)	10
K4036 IA (Disposed in 1937)	99
K4037 IA (Forced-landed near Stockton-on-Tees)	10, 149
K4038 IA	97
K4039 IA (Crashed, Tangmere Dec 13, 1937)	99, 149
K4040 IA	99, 97
K4041 IA	38, 10, 97
K4042 IA (Struck hillside Feb 12, 1936)	10
K4043 IA (Wing tip flare experiments)	38, 149
K4863 II	7
K4864 II (Crashed, Gainsborough Dec 12, 1936)	102
K4865 II	7, 149
K4866 II ('A' of 7 Sqn)	7, 78, 9, 149
K4867 II	7, 149
K4868 II	102, 78, 7, 97
K4869 II (Crashed edge of airfield April 28, 1936)	7, 97
K4870 II	78, 149
K4871 II (Hit trees, Finningley March 30, 1938)	7
K4872 II	102, 78
K4873 II	7
K4874 II (Abandoned due to icing, Dec 12, 1936)	102
K4875 II	7, 149
K4876 II (Hit trees, Finningley, April 6 1937)	7
K4878 II	97, 7, 99, 149



Serial and Mark Number and Remarks	Known squadron and unit service
K4878 II	97, 7, 78, 149
K5181 III	102
K5182 III	102, 9, 3 AOS
K5183 III (Wrecked, heavy landing Dec 16, 1937)	102
K5184 III (Used for flight refuelling experiments 1939)	97, 166
K5185 III (Sent to store April 1939)	10, 9
K5186 III (Delivered to 102 Sqn July 28, 1936)	102
K5187 III	102, 149
K5188 III (Forced landed north of York 1936)	102
K5189 III (Crashed May 1938)	9
K5190 III (Undershot flarepath, Scampton, Sept 1, 1937)	9
K5191 III	99, 149, 148, 3 AOS
K5192 III (To store March 1939)	9
K5193 III	10, 102, 4 AOS
K5194 III (Hit trees at Stradishall, Nov 14, 1938)	10, 78, 9
K5195 III	10, 78, 166
K5196 III	10, 98, 99, 148
K5197 III	10, 78, 99, 148
K5198 III	10, 78, 99, 148
K5199 III (Wrecked, wingtip hit tree Aug 15, 1939)	99, 148, 149, 3 AOS
K6857 III	99, 149, 148, 3 AOS
K6858 III (Struck off charge in March 1938)	99, 149, 99
K6859 III	99, 102, 149, 4 AOS
K6860 III (Hit stack 1/2 mile from Everton)	102
K6861 III	38, 78, 166, 4 AOS
K6862 III	38, 9, 97, 166
K6863 III	99, 148, 3 AOS
K6864 III	9
K6865 III (Crashed on range Jan 5, 1938)	9, 4 AOS
K6866 III	9
K6867 III (Crashed, engine cut near Scampton Aug 1937)	9
K6868 III	9, 4 AOS
K6869 III	9, 4 AOS
K6870 III	9, 97, 4 AOS
K6871 III	38, 99, 149, 3 AOS
K6872 III	38, 97, 166

AIRFIX magazine

Serial and Mark Number and Remarks

Serial and Mark Number and Remarks	Known squadron and unit service
K6873 III	7, 97, 166
K6874 III	7, 97, 166
K6875 III (Hit hill at Edale, July 22, 1937)	7, 97, 166
K6876 III	7, 99, 149, 148
K6877 III	7, 99, 149
K6878 III	7, 102, 9, 4 AOS
K6879 III	10
K6880 III (Burnt out at Weston, May 29, 1937)	166
K6881 III (To store May 1939)	9
K6882 III (u/c collapsed landing at Scampton Nov 30, 1936)	9
K6883 III	9, 4 AOS
K6884 III	78, 99, 148, 3 AOS
K6885 III	78, 166
K6886 III	166
K6887 III	166, 4 AOS
K6888 III	166
K6889 III	166
K6890 III (Hit hangar, Leconfield, 1939)	166, 4 AOS
K6891 III	166
K6892 III	166
K6893 III	99, 9, 4 AOS
K6894 III	99
K6895 III	166
K6896 III	102, 148, 4 AOS
K6897 III (Hit hangar, Driffild, April 29, 1939)	149, 99, 148, 4 AOS
K6898 III (Forced-landed Disley, Dec 12, 1936)	102
K6899 III	102, 148
K6900 III (Hit hill, Hendon Bridge, Dec 13, 1936)	102
K6901 III	102, 149
K6902 III (Used in radar research experiments, 1936-7)	9
K6903 III	149, 99, 9
K6904 III	149, 9, 3 AOS
K6905 III	99, 148, 3 AOS
K6906 III (Struck off charge in 1940)	99, 9, 4 AOS

Notes:

A and AEE: Aircraft and Armament Experimental Establishment, AOS: Air Observer School.

Heyfords differed as follows:

Mk I: 2 x Rolls-Royce Kestrel IIIS or IIIS-5 engines.

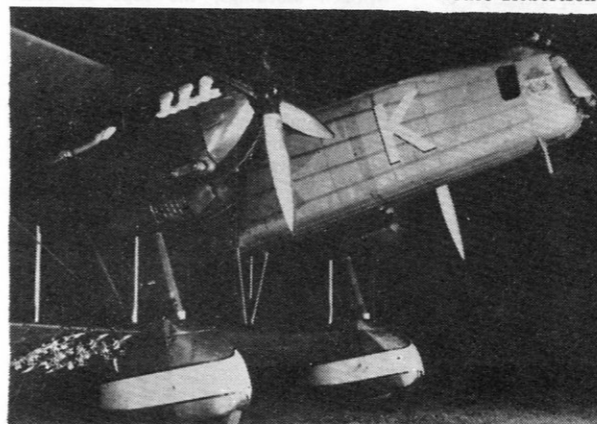
Mk IA: 2 x Rolls-Royce Kestrel IIIS or IIIS-5 engines with modified engine bearers giving a 200 lb weight saving and a motor-driven generator replaced the wind generator.

Mk II: 2 x Rolls-Royce Kestrel VI (derated) engines.

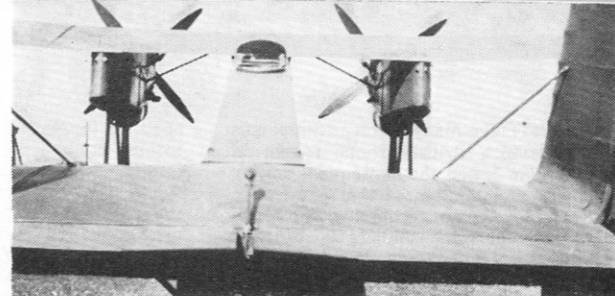
Mk III: 2 x Rolls-Royce Kestrel VII (full power setting). Steam condensers in leading-edge of top outer planes. Four-bladed propellers replaced initial two-bladed propellers.

Mks I and IA may have been interchanged on repair or reconditioning.

Bruce Robertson



June, 1970



Bottom left: 'K's of Nos 10 and 7 Squadrons, both of 'B' Flights with letters and wheel spat trim in yellow.

Above: Two unusual and intimate views of a Heyford in service provide useful detail aspects for anyone who contemplates modelling a Heyford from scratch—it has been done!

Colours 1960—from page 477

centrally placed on the fuselage was the buzz marking 'FW-007'. F-101Cs of the 81st TFW had their buzz marking on the under belly like 'FB-486' on 54-1486. This machine of the 78th Sqn had a black radome and was interesting in that it was the first production F-101C.

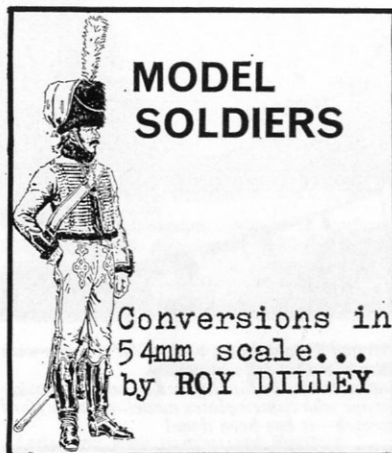
In France, the Americans had some B-57s including 33860 which was all black with red fin serials and D in white. 'BA-860' was stencilled in red on the rear fuselage, another example of a style of buzz markings which are now but a memory. The Convair F-102A Delta Dagger was a new shape in Europe; 52-1261: FC-261 appeared at one of the Armed Forces Day shows. It was light glossy grey overall with 'US AIR FORCE' and the buzz markings in black. The tail had blue and white striping. Squadron insignia on the tail identified it as of the 525th Sqn, Bitburg. Two deltas in blue and red were painted on the sides of the nose.

It seems a long time since the CF-100 equipped the RCAF in Europe, but in 1960 one could see examples like the Mk 4B 18423: NQ-423 of 423 Sqn, Grostenquin. It was camouflaged dark green and dark grey/light grey gloss, had a black radome, and red and white striped rudder.

To a large extent the study of aircraft markings is made most interesting by the oddity, the exception. One such of 1960 vintage was an Airspeed Ambassador of the Royal Jordanian Air Force. It was silver with a white top to the fuselage above a red line which extended from the wing trailing edge to the tailplane. The centre fin was white, the others all red and the nose was red too. Jordan's flag was on the centre fin, and roundels appeared at the extreme tips of the wings. Along the under belly 'ROYAL JORDANIAN AIR FORCE' appeared in red; '108' was applied to the rear fuselage in red, in both arabic and roman digits.

In some respects 1960 marked the start of a new era, for the big jets—the Boeing 707 and DC-8—were just coming into service in numbers. The 'big jet' age was really upon us. The piston engine was still a common feature of the aircraft of the world's air forces though. Into Royal Air Force service came the Lightning and at night you could see the American earth satellite Echo 1. It was indeed a new world as well as the start of a new decade. Since 1960 there have been many markings changes too. Nostalgia is a delightful thing.

DESPITE the many different campaigns in which British troops fought in World War 2, and the consequent variety of dress and equipment that they wore and employed, no comprehensive range of models of these soldiers exists, even within the United Kingdom. One can obtain miniature Germans and American GIs in reasonable variety both here and in the USA, but poor old Thomas Atkins is poorly represented. It is true that some of the specialist connoisseur figure makers



MODEL SOLDIERS

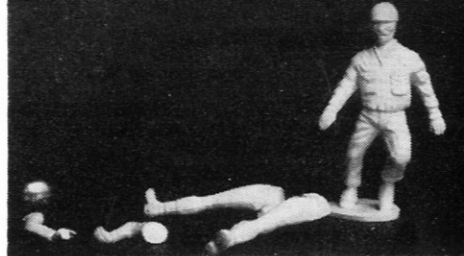
Conversions in 54mm scale...
by ROY DILLEY

have a limited number of British soldiers of the period in their catalogues, but these are for the most part infantry or personalities. In order then to cater for our armoured troops, engineers, gunners, signalmen, and the like, we are forced back on our own resources. Fortunately, by using and adapting some of the plastic figures readily available to us, it is possible to turn out some very realistic and authentic pieces to fill the gaps. The article this month describes the production of just such a figure.

I had for some time wanted to add to my collection a figure representing a Military Policeman in the Normandy campaign June-July 1944. The cramped conditions existing in the Allied bridge-

head at the time, with more and more troops, equipment and supplies pouring in all the while, meant that literally every square yard of territory had to be made use of. In the British Sector alone, four armoured, and no less than ten infantry divisions were jammed cheek by jowl, with all their vehicles and impedimenta, to say nothing of the supply units, dumps, and the considerable demands for space by the Royal Air Force. A magnificent job was done by the traffic control elements of the Military Police in preventing the congestion from turning into chaos, and nearly every road junction, major or minor, had its patient 'Red Cap' easing the flow of traffic. The nature of this work, and the fact that it had frequently to be undertaken in forward and exposed positions, meant that Military Policemen were very vulnerable to sniper fire, or to sudden surprise shelling or mortaring of cross-roads and junctions. It was by no means an easy or a pleasant duty, and the men who performed it so successfully deserve every credit even if some other aspects of their Police function were more unpopular with the troops!

Having the desire to make the model was one thing, but until quite recently I had not sorted out any satisfactory figures or parts from which to carry out the conversion. Then one day I was studying some spare Historex parts and it occurred to me that the French Infantry officer's legs of Napoleonic times, with 'turn down' boots, were not dissimilar to the legs of a British soldier wearing the despatch-rider's boots of World War 2. This was enough to set my imagination to work; I carried out a 'Five Ws' exercise (see article in March 1970 *Airfix Magazine*), and arrived at the following definition of the proposed figure. 'Sergeant of Corps of Military Police, in battle-dress, breeches and boots, standing astride, with right arm raised and left on hip, armed with pistol and Sten gun, directing traffic in Normandy, June-July 1944.' In the event this proved not to be an easy conversion, but one ideally suited to the modeller who, having mastered the basic



Above: *Airfix Racing Driver and Historex legs and arms form the basis for this conversion.*

techniques of plastic conversion, wants to apply them to a more exacting subject. Materials, etc., required:

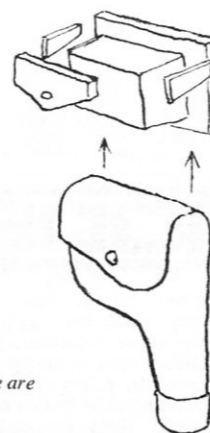
- 1 pair infantry booted legs at attention (Historex)
- 1 right arm with pointing fingers (Historex)
- 1 left arm, bent to rest on hips (Historex)
- 1 *Airfix* Motor Racing Figure No 8—Driver sprinting
- Strip and sheet plastic card
- Scrap plastic (from spares and scrap box)
- Polystyrene cement and Mekpak or similar liquid adhesive
- Plastic body filler or putty.

Figure 1 shows the basic uniform, worn by Military Police, at the time in question, without equipment or weapons. It will be noted that the brimless helmet was used; this had a leather lining and ear flaps fastening under the chin, which enabled it to double as steel helmet and crash helmet. The battle dress blouse, often worn open at the neck with some kind of scarf or sweat-rag, had two breast pockets, and shoulder straps. Since the Military Police used a great many motor-cycles for easy and rapid transportation, the nether garments usually consisted of the standard issue despatch-riders' breeches, and boots, worn over long woollen stockings, the tops of which were folded down over the boot tops.

The torso and head of *Airfix* Motor Racing Figure No 8 are ideal for the purposes of this conversion, and in fact require only a minimum of alteration. Cut through the figure at the waist and remove both arms, putting these and the discarded legs away in the scrapbox for



Fig 7
Pistol holster and belt to scale, plus 'exploded' view of construction

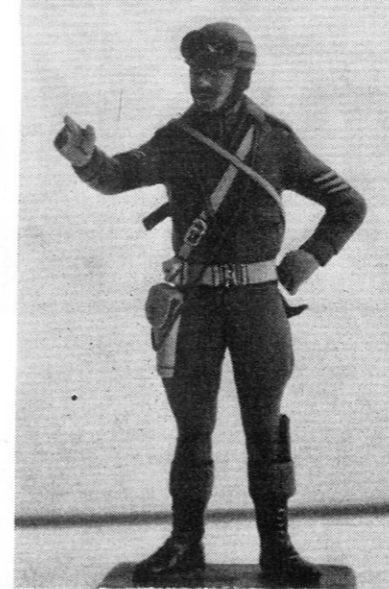


Holster assembly details shown here are not to scale.

possible use in future conversions. Carefully trim off the goggles from the face, and cut in the eye depressions. A little work with the knife at this stage will sharpen up the definition of the features, and the moustache can be reduced in size or completely removed according to taste. Remember, however, that military moustaches at this period, although required to be tidy, were often quite flamboyant. Now saw off the head completely at the neck, and refix it, slightly turned to the right, with polystyrene cement.

Next take the Historex legs and cut off the loop from the outside of each boot flap, which should then be reduced in height by about 1 mm, the outside of the left one also being flattened level with the calf of the leg, and the ankles of both boots being trimmed to a more ideal closely-fitting shape (Fig 2). Take approximately 2 mm off the waist end, and file a bevel on the inside of each leg, so that when they are joined with polystyrene cement they adopt an astride position (Fig 3). Join the torso to the legs with the same type of cement, having first sanded the joining surfaces absolutely flat to ensure the best possible joints. Apply a small amount of plastic putty to the outside of each thigh, and when thoroughly dry and hard, shape it into the flare of the breeches (Fig 3). Remove any flash or mould marks from the two Historex arms and file, gently, the cuffs to the shape indicated in Fig 4. Then cement the arms to the torso, and allow all the joints to dry out and harden thoroughly. When this has taken place, using knife, files, and fine emery or glass paper, clean up the join lines, and blend each part smoothly into its neighbour. The next thing is to make the base, and for this use a rectangle of .060 inch plastic card 20 mm x 25 mm, fixed with Araldite to a piece of sheet lead of the same thickness and dimensions. This gives the figure a stable base when it is cemented to the plastic side with polystyrene cement. Alternatively the base cut from the *Airfix* figure could be used, although this is not so heavy and stable.

Fit a strip of .01 inch plastic card 2 mm wide round the waist for the belt, with another 1 mm wide attached at the centre of the belt at the back, over the left shoulder, and secured to the belt



Above and right: *Front and rear views of the completed figure, reproduced larger than actual size. Beginners could leave the moulded goggles in place over the face if desired.*

again over the right hip forming the brace support (Fig 6). An ammunition pouch and pistol holster are then constructed from scrap plastic to the drawings given in Fig 7, and cemented to the right hip, with a lanyard of stretched sprue attached with a loop round the neck, and round the front of the holster to the pistol butt (Fig 8).^{*} Using the drawing given in my article in the April 1970 edition of *Airfix Magazine*, make from scrap plastic a Sten gun, and two spare magazines. Next cut two shoulder-straps 1.5 mm wide and 5 mm long from .01 inch strip, and fit them to the shoulders with Mekpak adhesive, with another strip 2 mm wide round the neck over the straps to form the battle-dress blouse collar (Fig 9). The Sten gun is now cemented on the back of the figure, and a .5 mm plastic card sling is fitted round the body, one end being fastened as shown to the gun-butt,

^{*} An alternative method of wearing the pistol holster and pouch is also shown. This involves two braces over the shoulders. The lanyard was frequently worn looped round the right shoulder instead of round the neck.

COLOURING DETAILS

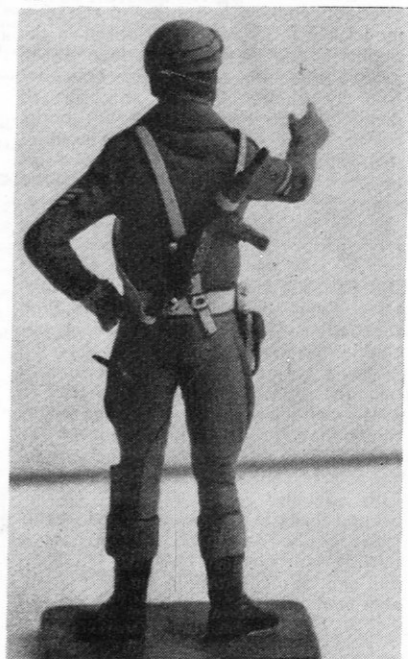
Helmet: Greenish-grey (Humbrol field-grey is suitable) with semi-matt brown ear-flaps. A semi-matt red band is painted right round the helmet just above the lower edge.
Goggles: Grey (rubber).
Battle-dress blouse: Khaki, with red shoulder titles lettered dark-blue.
Rank-stripes: Off-white.
Belt, brace, holster, pouch and Sten gun sling: Off-white with brass fittings.
Lanyard: Khaki-green.
Scarf: Pale Khaki.
Breeches: These were of Bedford cord, and Humbrol Dark Earth mixed with a little white renders their colour well. A little more white in the same colour should be used for the 'strapping' on the inside of the breeches' legs.
Stocking-tops: Mid-grey.
Boots: Semi-matt black. A light 'dusting' of Dark Earth is most effective.
Sten gun and magazines: Blueish-black, with steel highlights.
Base: Dark Earth with grass-green patches.
Arm-band: Dark blue with red lettering 'MP'.

the other to the barrel just in front of the magazine (Fig 10). Great care should be taken over this operation, as the very thin plastic card has a tendency to snap if roughly handled.

Now fix the two spare magazines to the flattened part of the left boot-top, and fit over them a strip of .01 inch plastic sheeting to form the stocking top, blending it on both sides as in Fig 11. Spare magazines were often carried in this way for easy access. Finally, shape goggles from .02 inch plastic card with a .5 mm 'strap', and fit them to the helmet front. Check that all stages have been carried out satisfactorily, and the model is ready for painting.

Although a relatively complex operation, which calls for patience and careful application of skills and techniques, this conversion can result in a unique figure of which the modeller can justly be proud, whilst providing him with the confidence to experiment with his own original ideas.

Next time I propose to deal with a mounted figure conversion of unusual type.



Below: *Reader R. P. Thompson made this excellent Gannet AEW3 from the Frog Gannet kit. The new dorsal section, exhausts and radar housing were all fashioned from block balsa, liberal use of body putty being necessary to fill the large holes left by the removal of the old AS4 exhausts. The undercarriage legs were lengthened with scrap plastic except for the nosewheel leg which was rebuilt using an unwanted Sidewinder missile. Drop tanks were adapted from *Airfix* Harrier kit.*

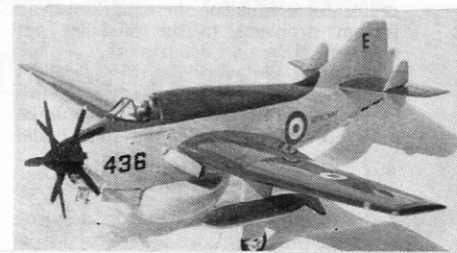


Fig 1
Basic uniform without equipment or weapons

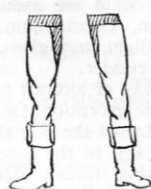


Fig 2
Historex legs: remove shaded parts



Fig 3
Shape boot tops and ankles. Flatten outside of left calf. Add plastic putty to make breeches flare



Fig 4
Shape of sleeve cuff

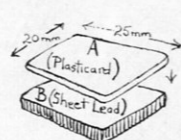


Fig 5
Base. Stick A to B

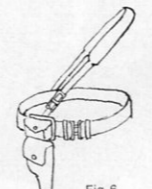


Fig 6
Alternative methods of wearing belt, braces, pistol holster, and pouch



Loop round neck

Loop round right shoulder



Fig 9
Detail of shoulder straps and collar



Fig 10
Sten gun and sling

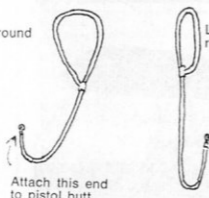


Fig 8
Alternative methods of wearing lanyard

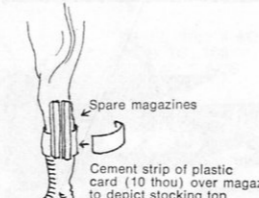


Fig 11
Detail of left leg AIRFIX magazine

Drawings not to scale, references in stock.

New kits—continued

kit may be made up from the waterline only if desired. Moulding detail is first-class and the kit is highly commended for ship modellers who collect this series of models. Price is 25s 6d.

Second model is the USS *North Carolina*, a famous American battleship of the war years. This follows the usual Revell high standard, with the numerous 5 inch gun turrets of the secondary armament being particularly well moulded. The fine deck detail and the tiny AA guns are also well depicted. The scale is 1:565, which is a little odd to say the least, but in practice this is close enough to the Airfix 1:600 scale for the model to be quite at home with the Airfix ship models. It is certainly a good looking and assembly is perfectly straightforward. The price is 14s 6d. C.O.E.

HELICOPTER FROM AURORA

FOLLOWING the increased interest in US Army helicopters, Aurora have produced a 1:48 scale model of the Lockheed AH-56A Cheyenne. This is an easy-to-build model made in the usual robust style of this company which, although it is less likely to be damaged, lacks a certain amount in detail. The accuracy of the outline is within reasonable limits and the kit can be recommended for the beginner as there should be few problems in assembly or painting.

There are nearly 40 parts in the kit which costs 9s 6d. Jones Bros of Chiswick have stocks and can supply by direct mail, providing 1s 6d extra is included for postage. A.W.H.

ATTACKER KIT

MODELTOYS of 246 Kingston Road, Portsmouth, have examples of Frog's old 1:72 scale Supermarine Attacker, which is not widely available today. The kit comes in a polythene bag without a brand name, but the mouldings, transfers and instructions inside are as for the original Frog release.

The Attacker is an elementary kit showing its age now, but it is capable of improvement and deserves a place in any collection of naval types. It was the Navy's first carrier-borne jet aircraft to see squadron service and is probably unique in having a tailwheel. The 15 parts fit together well and the transfer sheet is reasonable. Underwing stores and the big ventral fuel tank are omitted but could probably be added from the spares box, while improved ejection seat triangles and other warning signs could be applied.

Although rather overpriced at 4s 9d, this is a rare and pleasing item which should be snapped up. B.R.

NEW CARS

WE have received from Messrs Jones Bros of Chiswick three of the recent Japanese car kits. Two by Sankyo and the

other from Apollo Models. The Sankyo kits are the 1931 Grand Sport Alfa Romeo and the 1930 Supercharged Bentley, two very famous marques in their day. Both kits are in the 1:24 scale Classic Car Series and are motorised.

They are very complete and produce very satisfying replicas. Although the instruction sheets are in Japanese text the sketches are pretty well self-explanatory.

The wheels in both kits are in two parts; on the Alfa with its separate brake drums, care is needed to ensure a true assembly. The Bentley wheels have spigots at the hubs to give alignment, remembering to remove the chrome before cementing, of course. A Mabuchi Motor No. 13 is the motive power and both cars are driven via a small prefabricated gearbox. The Alfa power unit is housed in the boot while the Bentley's is in the deep undertray so characteristic of the three cars.

The starting handle very ingeniously actuates the battery switch of the Alfa Romeo, while the Bentley's is mounted below the dashboard. With both cars the 'works' are well out of sight.

As usual in this series a base is provided in each kit for the car to be mounted if it's decided to keep it static. Altogether two pleasing little cars that reflect the characteristics of the prototypes and are worthwhile additions to one's stable, and good value at 39s 11d.

The Apollo Model's kit is a 1:20 scale model of the 250 P5 Ferrari with prototype Berlinetti body, a very glamorous looking car, shown for the first time at the Geneva Motor Show. This is a more complicated kit and calls for greater care in assembly. The instruction sheet, although in Japanese, is very comprehensive with no less than 41 sketches to illustrate construction.

The model has actual working suspension with coil springs at the front and a form of torsion bar at the rear; in fact the whole transmission is sprung. Also included are actual headlights. These are illuminated very ingeniously from a single bulb. In the actual car the front lights are in the form of a unit rather than separate lamps, and the model reproduces this effect faithfully.

Normal Ackerman type steering is provided and a moulded ratchet on the track rod allows it to be set for the desired turn. The wheels, true to modern types, have very wide rims and although in two parts are substantial and true. The electric motor when installed is housed in a replica of the actual engine and is accessible by lifting the boot lid which is actually the rear window.

All the features both internal and external on the full size car are incorporated on the model. Possibly the only criticism is the colour, which is not quite that glorious red the Italians seem to produce, although the builder can easily paint it to his favourite colour. The kit makes up a very satisfactory replica of the sophisticated Ferrari 250 P5 and would grace anyone's sideboard. It is very moderately priced at 59s 11d when the quality is considered. B.L.

Right: One of the new Rose Models Mini-packs kits assembled but unpainted, showing the optional back-pack casting in front of the figure. This is the charging British infantryman of 1939-45 in 54 mm scale.



ROSE MODELS

LATEST release in the Rose Models 54 mm size range is a new Mini-packs figure of a running British Private, 1939-45, in battle dress and full equipment. The figure comes unpainted in simple kit form, with base, main body, back pack, and both arms, all as separate items. Assembly is very simple, and a degree of variation is possible in the arm position with a little filing or bending. As assembled, though, the figure holds his rifle across his body in the usual way. The standard of casting is high, as with all Rose figures. The quality is reflected in the price, which at 28s puts it in the 'connoisseur' class. This figure, and another twelve new releases, can be had from Oxford Model Centre, 94 St Clements, Oxford. The other releases include three more British, two Indian Army, three British African, four Amazons, and four Persian troops. The Amazons cost 23s each, all the others costing 28s a time. A catalogue featuring the Rose Minipacks series is available from Oxford Model Centre at 2s. In our last review of Rose models, in the April issue, we misled readers by stating that all the Rose items are included in this catalogue. In fact, the complete Rose catalogue is a large illustrated publication at 15s (also stocked by the Oxford Model Centre), and this does include everything produced by Rose including the very useful heads, arms, and equipment so helpful for figure converting. The 2s catalogue simply covers the Minipacks kits range. C.O.E.

NEW CATALOGUES

TWO new catalogues have reached us from Jones Bros of Chiswick, each from a major manufacturer. The Revell catalogue, at 2s 6d post free, contains several new space kits, and promises a 1:72 scale Bronco and a 1:144 scale DC-8 Super 61, also a 1:72 scale Jolly Green Giant. In the 1:32 scale range are promised several newcomers which look like 'dressed up' versions of existing kits and include a Seafire I, a P-40 in different markings, and an Me 109G, while a Corsair is definitely a new addition. The new Frog catalogue, at 2s post free, also from Jones Bros, offers several exciting new kits, including a Meteor IV, Whitley, and a 'Tribal' class destroyer in 1:500 scale. C.O.E.



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Letters to the Editor

Military matters

SINCE no one seems to have noticed, I thought I would point out to you that the General seated on top of the Crusader tank on the front cover of your February issue is Sir Bernard Paget, he is easily recognisable. Sir John Dill at this time held a staff appointment in Washington.

I would also like to comment on the carrier on the front of the January issue. You suggest that possibly it belongs to the 48th Division, I rather doubt this for the following reasons. If it had belonged to the 48th Division then it would surely have carried that formation's 'parrot' sign. It is also on the wrong side of the vehicle for a formation sign, I know there were exceptions, but they were few and far between. Again, I doubt whether the War Office would have permitted the use of an undesignated sign. Of all the British and British Empire signs used in both the First and Second World Wars there is only one single example of a formation with an undesignated Arabic numeral, that was the 1st Independent Guards Brigade.

A brigade of course in those days was not really a major formation, and this one after it left the 1st Division on June 1st, 1941, according to the official publication *Orders of Battle*, served under no less than sixteen different higher formations with a total of thirty-three changes. This frequent switching of command may well have been the reason why an exception was allowed in this case.

There were of course one or two other formations which used an Arabic numeral only thinly disguised, such as 10th Corps and 9th Anti-Aircraft Division.

The British during the war regarded these signs as highly classified material. The Americans on the other hand would seem to have given them the maximum publicity. About half the entire issue of the June 1943 *National Geographic Magazine* is devoted to this.

This issue is well worth getting hold of for in addition to formation signs, service insignia, army air corps and navy squadron badges are given, and all in colour too.

J. W. F. Dunn, Burgess Hill, Sussex.

Lightning news

LIGHTNING Mk1 AXM192—the aircraft that the Airfix model is based on, has been retired honourably from active service and is now at Wattisham on the Target Facilities Flight. It now acts as a target on exercises and provides combat practice for squadron pilots.

Flt-Lieut Keith Ansell, RAF Wattisham, Cambs.

Alfa changes

HAVING just finished the kit of the Alfa Romeo I would like to point out one or two amendments. In Part 1 of the plan it tells you to glue the exhaust pipe (part 14) on. Later, though, two of the mudguard/petrol tank supports have to go under the exhaust. May I suggest these parts (66, 67) are glued on before the exhaust pipe.

Also I found that cementing the dashboard where it is meant to be, pushed the

Letters to the Editor selected for publication entitle the senders to each receive a free Airfix plastic construction kit of their choice. We are always pleased to receive your comments and pictures, which will be considered for publication. Submitted material and pictures can only be returned if accompanied by a stamped addressed envelope, and the Editor cannot accept responsibility for safe keeping of any such contributions, neither does he necessarily agree with comments expressed by correspondents in the letters column. Please note that any letters anticipating a reply MUST be accompanied by a SAE or stamp.

steering column down. Then when I put the driver in I could not get the steering wheel on. This I remedied by putting a slot in the dashboard into which the steering column went.

Finally I found the transparent light fronts overlapped the back part of the light, these I sanded down. I thought the method of fixing the wheels was clever, as was the windscreen.

R. Meakings, Corby, Northants.

Card models

REGARDING cut-out models. I too can remember purchasing these at different times and those were made by Dean Books of London. In fact some 5 years ago. I was holidaying in the West Country and managed to purchase an Air Sea Rescue Launch, a Catalina Flying Boat, and a Galleon model at half-price to clear. Needless to say these are not made up but kept as mementoes.

I also have a very fine collection of unmade Micromodel card kits. I endeavour to get two of each one for reference and one to make up. I am of course still looking for the earlier ones but have some 100 sets.

I find a distinct fascination in making these up as they are a very different form of modelling.

R. Moorton, Eastbourne, Sussex.

Waterline effect

READERS may be interested to know of a way to make their model ships into waterline models without cutting the model. I found that a block of expanded polystyrene ceiling tile is excellent for this purpose. This block is easy to work with and can be glued with any suitable wood glue. I have recently made a waterline model of the *Tirpitz* with this block. First I cut the block to a thickness suitable to take the portion of the hull below the waterline, and then I chiselled out a hole to the shape of the hull. After making sure the ship fitted in properly, I then added pieces of the block taken out of the middle to make the waves. I also chiselled out sections to make deep troughs as if the ship was in rough water. Finally paint with poster colours.

Keith Read, Hermit Park, Queensland, Australia.

Scout altered

CONFORMING to the recent changes in the uniform of the modern Boy Scout, I

have converted the Airfix Boy Scout to give a realistic resemblance to the present uniform.

The process is very simple. The original model was built in three stages: (1) from the waist down; (2) the upper part of the body except for the arms; (3) the arms. The visible parts of the arms and legs were then built up with body putty, to the same thickness as the shirt and shorts respectively. When the body putty had dried it was then smoothed with sandpaper until the join was hardly noticeable. The badges above the breast pockets and on the beret, were filed off. The parts were painted and the complete kit assembled. The finishing touches were made by painting extra badges on the arms and a new cap badge above the left eye.

Roy Turner, North Shields.

Saturn features

A PART from the length of the Service Module, which is about $\frac{1}{8}$ inch too long, Airfix's new Saturn V rocket is an excellent model. However, there are a few incorrect parts in the painting scheme which I would like to point out. Firstly, if the model is to depict the Apollo 11 rocket, as on the base nameplate, the thick horizontal black line capping the lower set of vertical ones, should be omitted. Secondly, the Service Module should not be silver, but white, like the rest. It was only silver on the Apollo 9 mission, and even then the Command Module and the Lunar Module were silver also to match. Thirdly, the 4 'blips' sticking out round the 2nd/3rd Interstage section should be painted red. Anyway, this is a very good kit, especially for a rush job on the part of Airfix, and I hope to see more in this space range.

P. M. Baker, Farnborough, Hants

Carrier conversion

AFTER reading the item on British Conversions, I converted a Universal Carrier into the Carrier with Assault Bridge mentioned. I assembled the kit as per the instructions, missing out the figures and piece No 9. Then I cut two matches to a length of one inch and glued them on to the rear of the carrier and the bulkhead. After they had dried I cut two pieces of plastic card measuring 1 inch by $\frac{1}{2}$ inch and glued the first on to the matches and the second to the first at an angle of 45 degrees. Then I stuck 2 pieces of aluminium wire to the open ends. The result is quite a good representation of the real thing.

John Armatys, Sheffield 10.

Phantom points

FIRST of all I would like to congratulate you on your excellent article on the F-4 Phantom. Perhaps we could have more of this type of article dealing in depth on modern jets.

There are just a couple of points on which I would like to comment. In the conversion of the Airfix F-4B to the USAF F-4D it is not sufficient just to delete the

AIRFIX magazine

infra-red seeker from beneath the radome. The radome should be built up with body putty until it attains a diameter of approximately 17 mm.

Attention must also be paid to the tyres since on the USAF version of the aircraft they are wider than on Navy and Marine aircraft. They are in fact 4 mm in width instead of just over 2 mm. To correct this 0.5 mm can be removed from 2 Airfix tyres and then both glued together to provide one good tyre.

David Leyshon, Brierley Hill, Staffs.

Showcase

SOME of your readers might find the cost of the 'See Bee' Showcase (16s 7d) a bit much to pay for keeping their models in good order. I think that I have found an alternative, made by no less a firm than... Airfix! Our local chain store is stocking a 'Crispline' food container in rigid transparent polystyrene, with a blue, plastic clip-on base, selling at 6s 6d. It measures about 10 inches long by 6 inches wide, by 5 inches high. One is at present giving cover to my small-scale Napoleonic wargaming fleet, and another protecting a force of cavalry, and I can recommend this item most highly.

James Lancelot Raiton, Oundle, Northants.

Twin mustang

I was interested to see the Twin-Mustang conversion in April *Airfix Magazine* as

I am at present working on a similar conversion myself. Mr Philpott has however made one small error in his article. Although the starboard propeller of the P-82 was normal, the port propeller rotated in the opposite direction, ie, anticlockwise when viewed from behind. This is apparent in the photo heading the article, and also in the lower photo on page 153 of MacDonald's *Warplanes—Fighters, Vol. 4*.

C. P. Montgomery, Solihull, Warks.

Emblem colours

REGARDING Mr Biagi's letter in the March Issue I have found the colours of the scarecrow. His coat, hat and pipe were all Matt Black, the buttons and hole in his hat were white and his face, arms and 'leg' were wood coloured. The nearest matching colour to the original wood is Matt Khaki.

Similar emblems to this appeared on 359 Squadriglia aircraft. The only differences being that the stars and smoke were omitted and the white fuselage band had 359 and not 369 painted on it in black.

Also, a tip for keeping paint-brush bristles straight. Simply stick the wooden end in Plasticine and stand it upright on the workbench.

Richard J. Widmer, Brampton, Hunts.

Lettering

I have discovered a method of painting(?) small numbers or letters on to an air-

craft which I think readers might find useful.

This involves using an old John Bull printing set. I find the best is to use letters about $\frac{3}{16}$ inch high.

All you have to do is pick up the letters in a pair of tweezers, stroke the brush across, first dry, to remove any dust as this will impair the result, and then stroke across with paint. Be careful not to use too much as this will run.

I find it best to leave about a third of the height of the letter between each one (eg, $\frac{3}{8}$ inch high letters, $\frac{1}{8}$ inch between each). Then if the paint does spread the letters won't meet and mess the model up.

This is useful if you can't paint small letters.

N. Barge, Wellingborough, Northants.

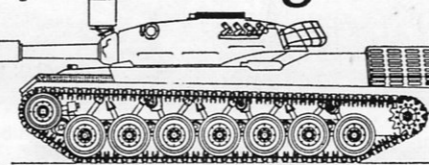
Transfer storage

I often lose small transfers in the folds of boxes. I have found a useful way of keeping odd serials and personal markings. I keep them in Boots coin wallets which can be found in Boots for around four shillings. They are made of plastic and have 36 different compartments of a suitable size for even the biggest squadron markings.

Ronald Stewart, Hayes, Middx.

Military Modelling

by
Chris
Ellis



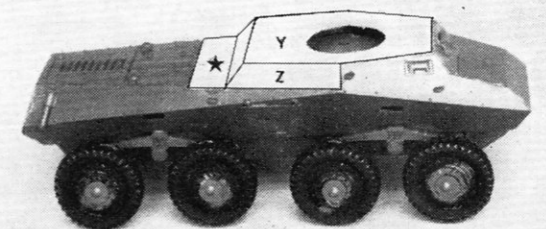
PUMA ARMoured CAR

VERY many readers request that earlier military conversions from these pages be repeated and 'top of the list' comes the Puma and the Sd Kfz 234 series of armoured cars which I covered more than five years ago. So for the benefit of those who missed it first time round, here is the Puma, plus the necessary details for correcting the basic error in the Sd Kfz 234/4 model from the kit, namely the mudguards.

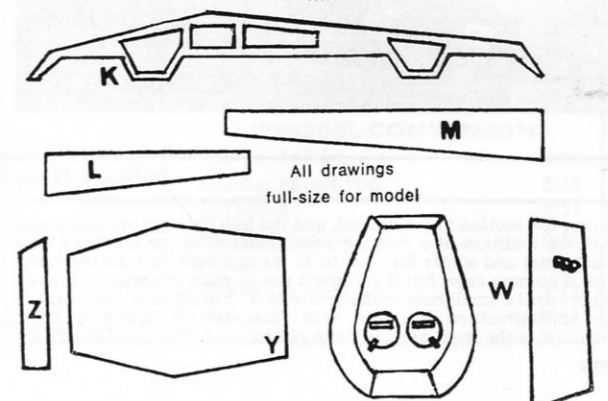
Dealing with the Sd Kfz 234/4 first, there is no actual conversion work involved. It is made exactly as described in the kit except that the mudguards are omitted, being of the wrong pattern for this series. The locating slots are filled with scrap plastic or body putty, and the areas are filed and sanded smooth. You can, if desired, forget about mudguards completely as they were sometimes removed or knocked off in service. This is not very typical, however, and the model is greatly enhanced by the addition of new mudguards (K) cut from 20 or 30 thou plastic card to the shape shown. Top pieces are also needed and these are drawn as L and M. They are cemented to the top edge of the mudguard sides, and the completed assemblies are glued into place after the wheels and sides have been painted. Finish off with small end pieces at the extremities, cut and shaped to fit. Lockers were fitted in the mudguards, each with its own door. Paper, cut to the shapes shown makes a very effective representation of these doors, and is simply cemented to the mudguard sides. To save space I've not included a picture of a modified Sd Kfz 234/4 model, but one is shown in *How to Go Plastic Modelling* and was also included in our January 1965 issue.

The well-known Puma makes a most handsome conversion, though the work involved in quite extensive. The hull and wheels are assembled as in the kit instructions, but the side coamings are cut away completely. Then cut away a neat rectangle from the rear sides of the fighting compartment and replace with part Z, shown on the model picture and in the drawing, this being cut from plastic card.

Continued on next page

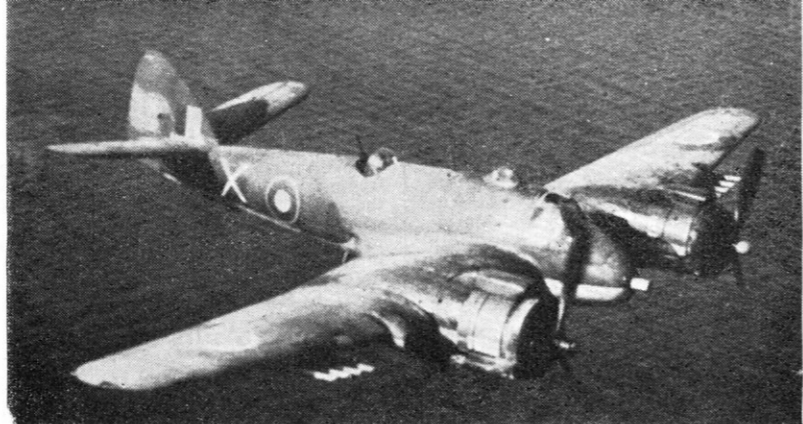


Top: Puma conversion showing hull modifications. Above: Completed Puma model; note co-axial machine gun. Note new mudguards, also applicable to the Sd Kfz 234/4. Below: Working drawings, all keyed to text.

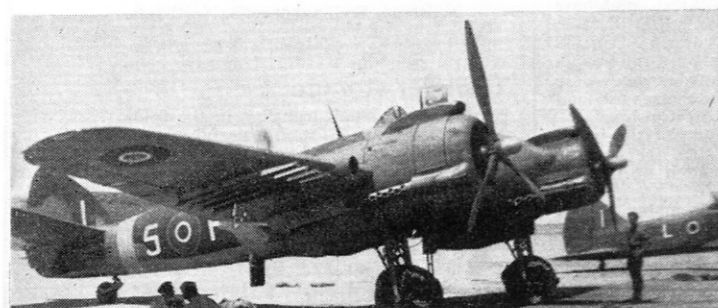


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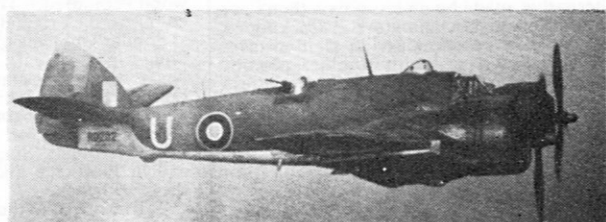
More rare pictures from readers with captions by Michael J. F. Bowyer. A free Airfix kit is awarded for every picture published, but please note that there is usually a delay of some months before publication due to the limited space at our disposal.



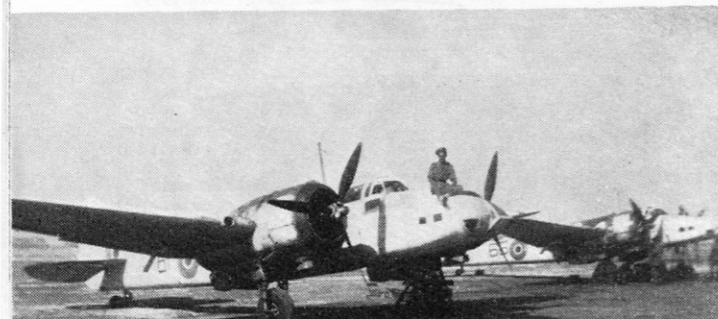
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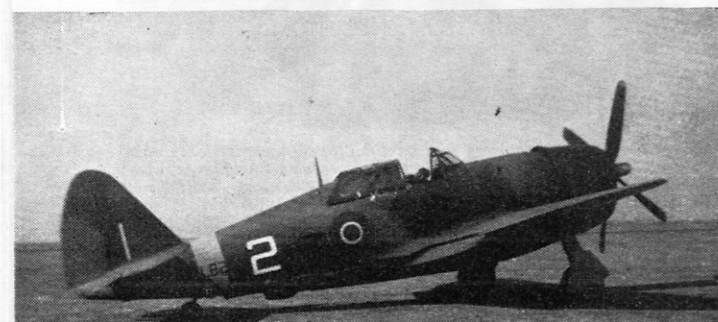
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6



5



4



7

This month's batch of pictures all come from one reader, M. Phillip of South Africa. The Beaufighters (1 and 2) are from 14 Sqn SAAF, and the odd nose fittings are presumably some sort of radar. U is RD202. X is carrying rockets and is a Mk X. NT966 (3) is an interesting hybrid; apart from the curious tipped nose radome, it appears to be grey-green-grey in finish with sky band and white code. It is from a Middle East OTU as is Thunderbolt 1 FL829:2 (picture 4). Hurricane LB902, 5-W, is from the same unit as the Beaufighter and wears temperate scheme fighter colours. Some Blenheim Vd were used for coastal recon work in the Middle East (6) and these two of an OTU retain the white/grey/green finish, and have black codes. Large numbers of Hart trainers (and others of the family) were passed to African SFTs. These two (7) are over Kimberley, SA. No 176, nearest, appears to have a tropical radiator and other modifications. Aircraft is yellow and silver, coded 75 (observed by shadow). Aircraft beyond is camouflaged.

Military Modelling—continued

A new top section (Y) is needed, and the hull changes are completed with the addition of a decking piece (marked in the picture with a black star) and a rear face cut to fit. I cut a hole to take the turret with a dummy cage, but if you use a pin or piece of sprue as a pivot, simply drill a small hole in the centre of Y. Finally add visor flaps in the superstructure rear and rear face, exactly matching those moulded at the front and cut from plastic card. New mudguards are

then added, as described for the Sd Kfz 234/4.

The turret must be scratch-built from either balsa cut and sanded to shape (drawing W) or laminations of plastic card similarly sanded to shape. A conical mantlet is needed (I used the tip of a StuG III mantlet) and the gun is a 6 pdr barrel cut to 24 mm long. Hatches and smoke dischargers are added to match the plan. A typical colour was sand with green mottle or patches.

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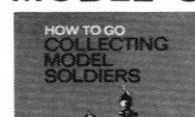


By Michael J. F. Bowyer

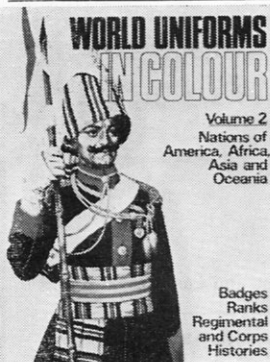
Michael J. F. Bowyer, well-known contributor to 'Airfix Magazine', details the development and changes in camouflage and markings of all Royal Air Force fighter types from 1937-1969 and lists the serial number allocations of every RAF fighter ever flown in that period. He records comprehensively how RAF colours altered over the years, against the background of contemporary events. Each chapter is illustrated with detailed line drawings depicting specific aircraft in typical markings of the period, with 139 individual drawings in all. In addition to 157 excellent photographs, there are exhaustive appendices giving precise data on all RAF fighter types since 1937. 192 pages, 8 1/2" x 5 1/2", case bound. (35s net)

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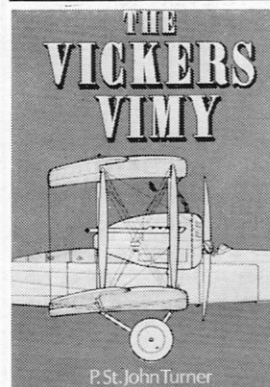
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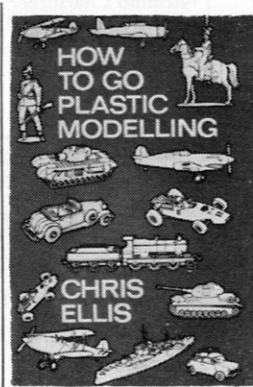
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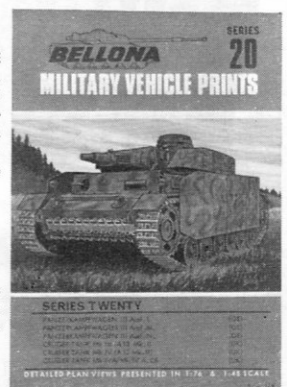
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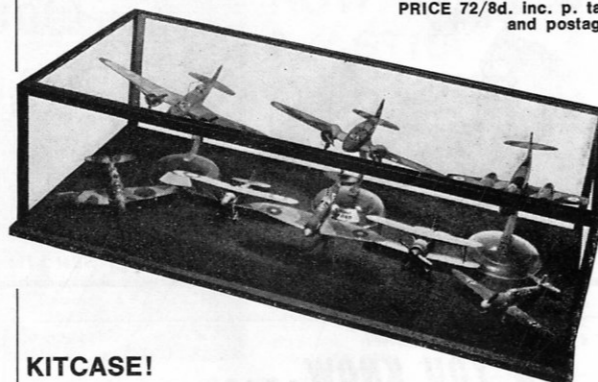
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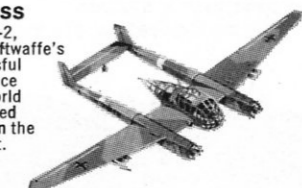
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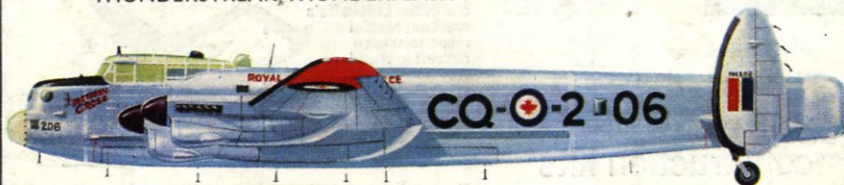
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